

The Power of Exercise: How High Intensity Exercise Can Improve Cancer Related Fatigue in Women with Breast Cancer

Alice Waithaka, SN, Rebecca Ward, SN, and Kelsey Webb, SN

Kelle Huong Phan, DNP, RN, NNP-BC, Andrea Brooks, PhD, RN, PPCNP-BC, and Shermel Edwards-Maddox, MSN, RN, CNE, RN-BC

PICOT Question

In breast cancer patients, what is the effect of implementing a high intensity exercise program on the patient's level of cancer related fatigue compared with patients receiving standard care within 6 months?

Literature Search

Databases Used:

- Google Scholar
- PubMed
- CINAHL

Keywords Searched:

- Effects of exercise on breast cancer patients
- High intensity training and cancer related fatigue
- Breast cancer and fatigue
- Cancer related fatigue and exercise programs
- Breast cancer and exercise programs

Narrowing Results:

- Originally: 98,400 studies available
- Eliminated studies that didn't focus on high intensity exercise programs, older than 5 years, male cancer participants, or opinion based
- 23 potential studies appropriate for review

Article Selection criteria:

- Peer reviewed studies, RTCs, published from 2016-2021, implemented high intensity exercise programs for cancer related fatigue

Synthesis of Findings

- High intensity exercise is a safe and effective self-management strategy to control cancer related fatigue (Bernsten et al., 2017; Hagstrom et al., 2016; Mijwel et al., 2019; Santagnello et al., 2020; Schmitt et al., 2016; Zhang et al., 2018).
- Studies using the FACT-F scale (Bernsten et al., 2017; Hagstrom et al., 2016) and Piper Fatigue scale (Mijwel et al., 2019; Santagnello et al., 2020; Zhang et al., 2018) showed that fatigue was significantly reduced when implementing exercise as an intervention for cancer related fatigue.
- When implementing exercise in cancer patients, reduced fatigue led to increased quality-of-life (QOL) (Bernsten et al., 2017; Hagstrom et al., 2016; Mijwel et al., 2019; Santagnello et al., 2020; Schmitt et al., 2016) and the ability to return to work (Bernsten et al., 2017; Mijwel et al., 2019).
- In addition to reduced cancer related fatigue, studies have shown that exercise also reduces depression and mood disturbance in cancer patients (Bernsten et al., 2017; Schmitt et al., 2016; Zhang et al., 2018).
- Cancer related fatigue improved among patients during treatment and also extended to one year after treatment as a result of exercise interventions. (Bernsten et al., 2017; Hagstrom et al., 2016; Mijwel et al., 2019).
- Motivational support and exercise accessibility led to increased adherence to exercise and hence increased improvement in cancer related fatigue. (Mijwel et al., 2019; Santagnello et al., 2020).
- Supervised exercise programs led to improved levels of fatigue due to increased accountability during the intervention (Mijwel et al., 2019; Zhang et al., 2018).

Decision to Change Practice

- For women undergoing breast cancer treatment, we are going to implement a supervised high intensity interval training (HIIT) exercise program that requires participants to complete a 60 minute HIIT workout two times a week for 16 weeks total. High intensity programs significantly reduced cancer related fatigue when implementing supervised High Intensity Interval Training (HIIT) as an intervention for cancer related fatigue (Bernsten et al., 2017; Hagstrom et al., 2016; Mijwel et al., 2019; Santagnello et al., 2020; Schmitt et al., 2016; Zhang et al., 2018).
- We will work collaboratively with oncologists and tell them about our program and have them inform their patients that are undergoing breast cancer treatments about our HIIT program and the benefits of the program including that it will reduce cancer related fatigue that they will experience during their treatment (Bernsten et al., 2017; Hagstrom et al., 2016; Mijwel et al., 2019; Santagnello et al., 2020; Schmitt et al., 2016; Zhang et al., 2018).
- For the patient's convenience, they can choose to partake in the program at the hospital, at home with a home health nurse, or online with nurse guidance (Santagnello et al., 2020; Zhang et al., 2018).
- To increase adherence to the exercise program we will provide nurse supervision to keep them accountable and to help keep them motivated (Mijwel et al., 2019; Zhang et al., 2018).
- We will use the FACT-F scale to measure the patient's cancer related fatigue levels before and after the HIIT exercise intervention. The FACT-F scale is a tested scale for measuring the level of cancer related fatigue (Bernsten et al., 2017; Hagstrom et al., 2016).



Evaluation

Improvements found in breast cancer fatigue measured by FACT-F scale before and after exercise interventions over 6 months.

References

- Berntsen, S., Aaronson, N. K., Buffart, L., Børjeson, S., Demmelmaier, I., Hellbom, M., Hojman, P., Igelström, H., Johansson, B., Pingel, R., Raastad, T., Velikova, G., Åsenlöf, P., & Nordin, K. (2017). Design of a randomized controlled trial of physical training and cancer (phys-can): The impact of exercise intensity on cancer related fatigue, quality of life and disease outcome. *BMC Cancer*, 17(1). <https://doi.org/10.1186/s12885-017-3197-5>
- Hagstrom, A. D., Marshall, P. W., Lonsdale, C., Cheema, B. S., Fiatarone Singh, M. A., & Green, S. (2016). Resistance training improves fatigue and quality of life in previously sedentary breast cancer survivors: A randomised controlled trial. *European Journal of Cancer Care*, 25(5), 784–794. <https://doi.org/10.1111/ecc.12422>
- Mijwel, S., Jervaeus, A., Bolam, K. A., Norrbom, J., Bergh, J., Rundqvist, H., & Wengstrom, Y. (2019). High-intensity exercise during chemotherapy induces beneficial effects 12 months into breast cancer survivorship. *Journal of Cancer Survivorship*, 13(2), 244–256. <https://doi.org/10.1007/s11764-019-00747-z>
- Santagnello, S. B., Martins, F. M., de Oliveira Junior, G. N., de Freitas Rodrigues de Sousa, J., Nomelini, R. S., Murta, E. F. C., & Orsatti, F. L. (2020). Improvements in muscle strength, power, and size and self-reported fatigue as mediators of the effect of resistance exercise on physical performance breast cancer survivor women: A randomized controlled trial. *Supportive Care in Cancer*, 28(12), 6075–6084. <https://doi.org/10.1007/s00520-020-05429-6>
- Schmitt, J., Lindner, N., Reuss-Borst, M., Holmberg, H.-C., & Sperlich, B. (2016). A 3-week multimodal intervention involving high-intensity interval training in female cancer survivors: A randomized controlled trial. *The Physiological Society*, 4(3). <https://doi.org/10.14814/phy2.12693>
- Zhang, Q., Li, F., Zhang, H., Yu, X., & Cong, Y. (2018). Effects of nurse-led home-based exercise & cognitive behavioral therapy on reducing cancer-related fatigue in patients with ovarian cancer during and after chemotherapy: A randomized controlled trial. *International Journal of Nursing Studies*, 78, 52–60. <https://doi.org/10.1016/j.ijnurstu.2017.08.010>

Acknowledgements

We would like to thank Professor Kelle Huong Phan, DNP, RN, NNP-BC, Professor Andrea Brooks, PhD, RN, PPCNP-BC, and Professor Shermel Edwards-Maddox, MSN, RN, CNE, RN-BC for their guidance and mentorship on this poster. We would also like to thank our partners Alice Waithaka, Rebecca Ward, and Kelsey Webb on their contributions to the poster.

