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### Low to moderate intensity exercise decreases cancer-related fatigue in cancer patients

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# Low to moderate intensity exercise decreases cancer-related fatigue in cancer patients



Sierra Tien, FHNS & Wendy Zimmerman, FHNS

Fort Hays State University, Department of Nursing

## Abstract

**Objective:** To determine if low to moderate intensity exercise decreases cancer-related fatigue (CRF)

**Design:** Quantitative, Quasi-experimental, Descriptive

**Setting:** Dreiling Schmidt Cancer Institute in Western Kansas

**Participants:** Cancer Patients

**Methods:** Cancer patients will participate in any low to moderate exercise of their choosing to help decrease CRF. The patients will download the CANXercise app to their smartphone. Cancer patients will fill out a questionnaire prior to exercise and two hours after exercise to monitor the effects of low-to-moderate exercise on CRF.

**Results/Conclusions:** Pending results and data collection.

## Introduction

Cancer-related fatigue (CRF) is a problem for 1 in 3 cancer patients receiving treatment (Escalante, 2019). CRF is more intense than fatigue (American Cancer Society, 2018). Cancer patients combat CRF with symptoms of nausea, low energy levels, weakness, pain, depression and stress due to treatment. In response, tailored interventions are needed. One intervention is low to moderate exercise including at least 150 minutes of moderate intensity (30 minutes, five days a week) with a heart rate 50%-70% of the individual's max heart rate (American Cancer Society, 2019; Bumgardner, 2019). Examples of low to moderate exercise are resistance and aerobic training. In order to facilitate this intervention, a unique smartphone health application called CANXercise, will be implemented for self-report and support in completing the tailored exercise. As research validates, low to moderate exercise will likely decrease cancer related fatigue, which will ultimately lead to improved health and well-being for each individual.

## Purpose

The purpose of this study is to decrease CRF in patients through low to moderate intensity exercise using a smartphone health app for self-report and support.



<https://www.bjfm.co.uk/cancer-app-gets-nhs-approval>

## Key Terms (Operational Definitions)

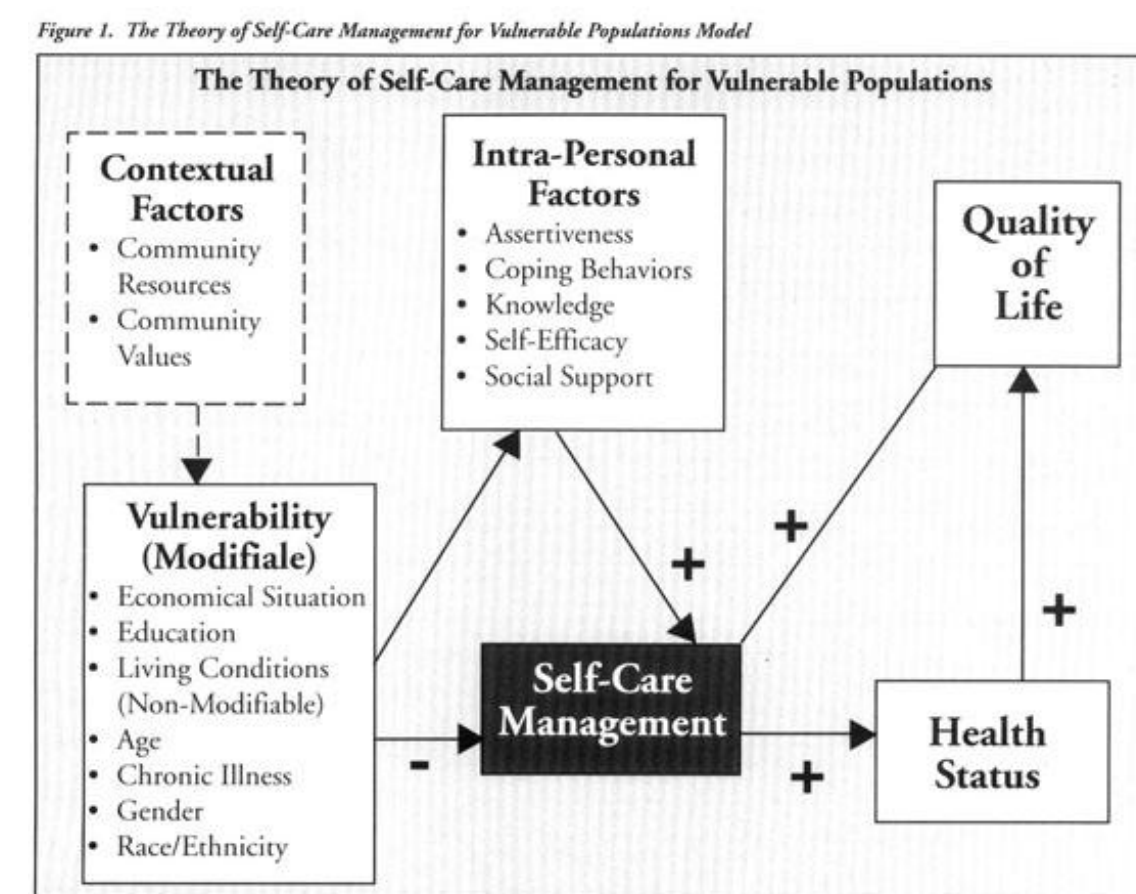
•**Cancer-related fatigue (CRF):** A state of physical and mental exhaustion, weakness, and decreased energy levels not relieved by rest disrupting work, social life, or daily routine (American Cancer Society, 2018).

•**Low to Moderate Intensity Exercise:** Any activity in motion performed at least 150 minutes total a week with a heart rate of 50%-70% of the individual's maximum heart rate; to find maximum heart rate, subtract age from 220 (American Cancer Society, 2019; Bumgardner, 2019).

•**CANXercise Application (App):** A smartphone health app for self-report and support downloaded by each cancer patients on their phone in order to complete documentation following low to moderate intensity exercise; The tailored exercise program consists of resistance and aerobic training prescribed by clinicians to guide and monitor exercise (Boldt, 2017).

## Framework

Dorsey & Murdaugh's (2003) Theory of Self-Care Management for Vulnerable Populations helps to show the decrease in CRF in all cancer patients through low to moderate exercise.



## Methodology

### Research Design

Quantitative, Quasi-experimental, Descriptive

### Interventions

Cancer patients will use the CANXercise app.

**Independent Variable:** Low to moderate intensity exercise performed at least 150 minutes total a week with a heart rate of 50%-70% of the individual's maximum heart rate

**Dependent Variable:** CRF

### Proposed Research Question

Low to moderate intensity exercise performed at least 150 minutes total a week with a heart rate of 50%-70% of the individual's maximum heart rate will decrease self-reported CRF in cancer patients.

### Literature Sources

Research suggests that low to moderate intensity exercise decreases CRF in patients when performing at least 150 minutes of moderate intensity with a heart rate 50%-70% of the individual's max heart rate (American Cancer Society, 2019; Bumgardner, 2019). Researchers suggest that cancer patients need social support by means of a smartphone health app that connects cancer patients to their self-reported feelings, and to help them become more active (Boldt, 2017).

### Sample

Cancer patients from Dreiling Schmidt Cancer Institute in Western Kansas.

## Ethical Considerations

Full IRB review at Dreiling Schmidt Cancer Institute, Nursing Department of Fort Hays State University, and Fort Hays State University

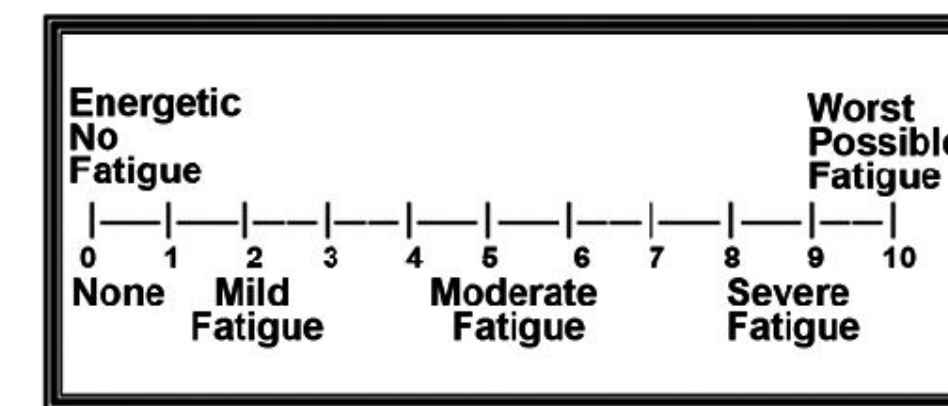
## Data Collection

N= 200

n= 100 patients meeting inclusion criteria

n= 100 patients meeting exclusion criteria

100 cancer patients choosing to participate in this study will be enrolled from the Dreiling Schmidt Cancer Institute. A written consent will be obtained. Inclusion criteria: Patients who perform at least 150 minutes of moderate intensity exercise a week with a heart rate of 50%-70% of the individual's max heart rate and completing a smartphone health app questionnaire prior to exercise and two hours after exercise to monitor the effects of low-to-moderate exercise on CRF. A measurement of the patients fatigue will be evaluated at the beginning of the study and at the conclusion, the study will last a total of six months.



[https://www.researchgate.net/figure/Numerical-fatigue-e-rating-scale-provided-to-subjects-with-multiple-sclerosis-on-a-separate-rate\\_fig2\\_46037687](https://www.researchgate.net/figure/Numerical-fatigue-e-rating-scale-provided-to-subjects-with-multiple-sclerosis-on-a-separate-rate_fig2_46037687)

## Projected Data Analysis Method

An dependent t-test will be used along with the CANXercise app for self-report questionnaire before and after exercise to determine the decrease of CRF from low to moderate intensity exercise.

## Literature Findings

According to Johnsson (2019), cancer patients reported an improvement in stress 65%, energy 71%, and nausea 75% indicating a decrease in CRF and positive changes in self-reported energy, stress and nausea. In a second study, Kessels (2018) confirmed a positive relationship between CRF and low to moderate intensity exercise, being the most effective non-pharmacological treatment for CRF. As a result, low to moderate exercise improves CRF. According to Boldt (2017), smartphone health apps make self monitoring easy and make setting goals and monitoring behavior fun and rewarding.

## Discussion

### Implications For Nursing

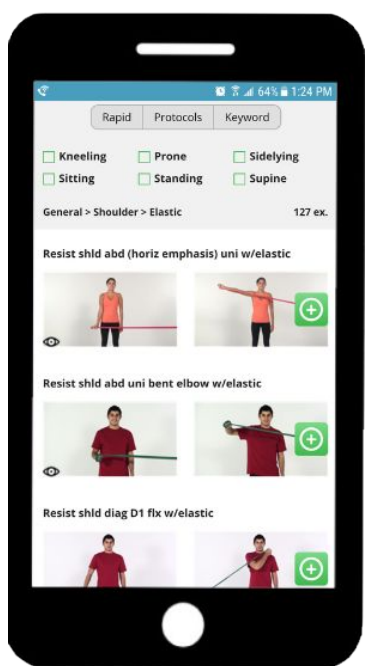
If low to moderate intensity exercise is found to be effective in decreasing CRF, pamphlets for education can be provided to patients receiving treatment that include the step by step process of downloading the CanXercise smartphone health app, completing the questionnaire before and after exercise, how to perform low to moderate intensity exercises, how to document exercise, and an explanation of the benefits and how low to moderate exercise decreases CRF.

## Limitations to Study

The sample size includes patients only from one rural western Kansas cancer institute. For future research, it is suggested that this study be conducted in a larger scale so these findings can be applied to a greater population.

## Conclusion

Pending results and data collection. Previous research suggests low to moderate intensity exercise where the patients heart rate reaches 50%-70% of their max heart rate decreases CRF. Previous research suggests that there is a relationship between mood, feelings, and future physical activity in a natural environment where physical activity increases feelings of energy and although these findings were not specific for cancer patients, it may still provide insight for improving physical activity in the cancer population (Boldt, 2017). Furthermore, research suggests a mobile health platform for social support and real-time assessment tool (Boldt, 2017).



<https://www.exerciseprolive.com/home-exercise-software/>

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DEPARTMENT OF NURSING

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NURS322

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