

# Home-Based High-Intensity Interval Training to Improve Colorectal Cancer Survivorship: Feasibility and relationship with novel surrogate biomarkers of colorectal cancer recurrence

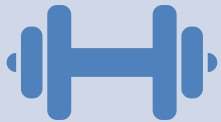
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## Exercise augments physical outcomes associated with CRC survival and quality of life

Body composition  
Physical function  
Cardiorespiratory fitness  
Chemotherapy-induced peripheral neuropathy (CIPN)



Exercise at **fairly high doses** ( $\geq 18$  MET-hrs/wk) is linked with:

**50% ↓ in CRC recurrence**  
**39% ↓ in CRC-specific mortality**  
**42% ↓ in total mortality**



# Challenges for CRC Survivors



**Engagement** in regular exercise **is low**

**Time is** the biggest reported **barrier to exercise**



Relationship between **exercise & ↓ CRC recurrence is unknown**



# Previous Exercise Trials Among CRC Survivors:



Support **feasibility & safety** of supervised and **home-based exercise**

Exhibit **exercise-related improvements** in **physical function, body composition,** and **cardiorespiratory fitness**

**Majority** of these **trials** tested **Moderate-Intensity Continuous Exercise (MICE)**



# High Intensity Interval Training (HIIT)



In **other clinical populations**

**Equivalent or greater improvements in body composition & fitness compared to MICE** in supervised, home-based, and mixed settings



In **CRC survivors**, only **two trials** have **compared MICE to HIIT**

- **Supervised** setting
- **Support HIIT feasibility** and demonstrate **greater improvements in body composition & fitness** with HIIT



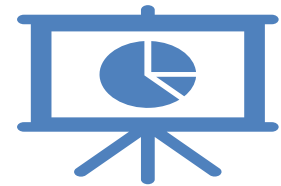
# Home-Based Exercise



**Home-based methods** ↑ **exercise engagement** among **CRC survivors acutely & long-term**



Most cancer survivors identify a **preference** for **exercise** they can do **on their own/home-based**



There are **no data** on the **feasibility** of **home-based HIIT**



# Study Aims



To demonstrate feasibility of home-based HIIT among CRC survivors



Assess preliminary efficacy of the tested home-based exercise regimens on physical outcomes linked with CRC survival and quality of life (i.e. body composition, physical function, fitness and peripheral neuropathy)



To explore the relationship between exercise and changes in novel surrogate biomarkers of CRC recurrence



# Eligibility Criteria

## Inclusion:

1.  $\leq 5$  years post-resection and adjuvant therapy for stage II-III CRC survivors.
2. Age 19-75 years old.
3. No known cardiovascular, metabolic or renal disease, and no signs/symptoms suggestive of cardiovascular, metabolic, or renal disease per ACSM exercise pre-participation health screening questionnaire.

## Exclusion:

1. Functional limitations requiring a walker, scooter, or wheelchair.
2. Clinically evident recurrent disease.
3. Resting blood pressure  $\geq 140/90$  at the time of baseline testing.





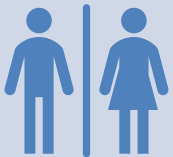
# Participant Population & Study Design



30 Stage II-III CRC survivors post-resection & adjuvant therapy within 5-year surveillance period



Recruitment from Huntsman Cancer Institute & Intermountain Healthcare



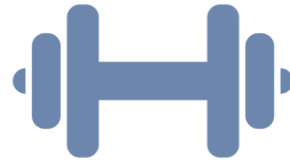
Randomly assigned to 12-week home-based HIIT or home-based MICE intervention



# Consent & Assessment



**Consent and assessment sessions will be conducted on the University of Utah campus**



**Assessments at baseline & end-of-study (12 weeks):**

Body composition

Physical function

**Cardiorespiratory fitness**

CIPN

Leisure time physical activity

Blood draw



**Additional assessment at end-of-study:**

Feasibility assessment

Exit interview



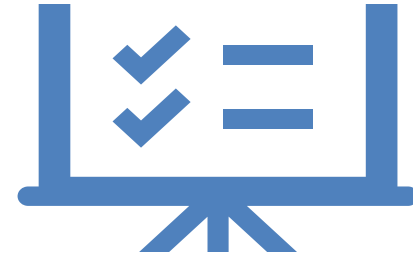
# Cardiorespiratory fitness - Cardiopulmonary exercise test

- Calibration of gas analyzer and flowmeter
- 12-lead electrocardiogram (ECG)
- Modified Balke Protocol
- At the end of each stage,
  - Rating of perceived exertion,
  - Heart Rate
  - Blood Pressure
  - ECG
- Peak aerobic capacity & HR





Both protocols include heart rate (HR) training based on **measured peak HR** from cardiopulmonary exercise test



## **Familiarization Session**

Conducted at the end of the baseline assessment session, after all data is collected

Study personnel will set up Polar devices with participants and show them how to use it

Written instructions provided



# Polar Equipment



# Handbooks

## Participant Handbook

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## Staff Handbook

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# Impact



ONE OF THE MAJOR RESEARCH PRIORITIES FOR CRC SURVIVORSHIP IS TO IDENTIFY LIFESTYLE STRATEGIES THAT CAN IMPACT SURVIVAL OUTCOMES.



FIRST STEP IN IDENTIFYING A FEASIBLE, ACCEPTABLE, AND EFFECTIVE EXERCISE INTERVENTION THAT CAN IMPROVE PHYSICAL OUTCOMES LINKED WITH SURVIVAL AND REDUCE RECURRENCE RATES.



AN EFFECTIVE AND ACCEPTABLE EXERCISE PRESCRIPTION MAY RESULT IN REDUCTION OF CRC RECURRENCE AND HEALTH CARE COSTS OVER TIME.



# Thank You

