



# Feasibility of "Couch to 5K" run training program for cardiac rehabilitation patients

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## Disclosures

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## Background

- Regular aerobic physical activity** has myriad health benefits including reducing atherosclerotic cardiovascular disease risk. **However, maintenance of physical activity is a challenge**, and many adults do not meet recommended physical activity guidelines.
- For **patients with cardiovascular disease** who have experienced a cardiac event or have undergone cardiac procedures (e.g., myocardial infarction, coronary artery bypass grafting, valve replacement, coronary revascularization, chronic stable heart failure (1, 2)), **re-establishment of cardiovascular fitness is a critical aspect of recovery** with implications for long-term morbidity and mortality.
- Cardiac rehabilitation** is an American Heart Association class-I recommendation and has a significant demonstrated benefit for secondary prevention (1, 2).
- Cardiac rehabilitation is a **structured, multidisciplinary program that includes a physical activity component** designed to increase cardiopulmonary fitness which consists of acute inpatient (Phase I), supervised outpatient (Phase II), and maintenance (Phases III and IV) phases (1, 2).
- Phase II** is a **supervised exercise program** of limited duration, usually 3 sessions per week for 12 weeks, during which patients develop cardiopulmonary fitness (1,2).
- Following completion of Phase II, patients progress to the **maintenance phase** and recommendations for regular physical activity are similar to those for the general population, e.g., 30-60 minutes of moderate aerobic activity on most days of the week (1). However, as exercise sessions are no longer directly supervised, **maintenance of recommended levels of physical activity is variable and suboptimal**, and influenced by patient-centric and environmental factors (3, 4, 5, 6).
- Some data suggest that **maintenance of physical activity following cardiac rehab may be augmented** by remote coaching (e.g., provision of structured training plan) and increased social support (7, 8, 9).
- Local road running races**, especially those of the 5-kilometer (5K) distance, are increasingly popular across the country, and many are accompanied by community-based structured training programs for beginning runners and walkers. Colloquially called **"Couch-to-5K" programs**, these may be offered by community athletic companies and are also available online. The core principles of these programs are gradual introduction of walking and running over a period of weeks culminating with participation in a specific 5K road race. These **programs make walking/running accessible** to those who may have never run before, offer **structured guidance** for progressively increasing physical activity, and also serve as a **source of social support** via interaction of participants. The 5K events themselves also provide an environment of community and social support.
- Beginning training programs with a goal 5K event have been implemented successfully in other populations (10, 11). Given this, **it is possible that training for a local 5K race may be a mechanism to provide additional structure and social support for recent cardiac rehab patients** that could enhance maintenance of regular physical activity following completion of cardiac rehab.
- However, the feasibility of implementing a beginning run/walk program culminating in a 5-kilometer road race for cardiac rehabilitation patients has never been examined.**

## Objectives

- The purpose of this study** is to determine the **feasibility of a 16-week beginning run/walk program** culminating in a 5-kilometer local road race in **patients who have completed Phase II of Cardiac Rehabilitation** at Michigan Medicine.
- Exploratory aim:** to examine whether **participation in a beginning run/walk program** following Phase II of cardiac rehabilitation **improves long-term maintenance of physical activity.**

## Methods/Approach

### Institutional and ethical approval:

- Approved by Michigan Medicine Institutional Review Board (HUM00166970)

### Participants:

- Adult (>18 years of age) volunteers
- Have completed Phase II Cardiac Rehabilitation
- No contraindications to running/walking

### Recruitment:

- Flyers posted at Domino's Farms Preventive Cardiology clinic

### Risk stratification and exercise training program:

- Patients **risk-stratified** into low-risk (goal to run the 5K), medium-risk (goal to jog/walk the 5K), and higher-risk (goal to walk the 5K) by the study team cardiologists and exercise physiologists
- Individualized, progressive ~16-week training plan** provided to each participant by exercise physiology staff
- Training plans comprise **3 exercise sessions per week**, which patients may complete at Domino's Farms under exercise physiology supervision or on their own after consultation with the study team
- Participants **record exercise in provided training logs** as a metric of compliance. Logs reviewed weekly by the study team, and plans adjusted on an individual basis if needed.

### Education:

- Participants will receive educational information for beginning runners from the study team throughout the training period on topics such as footwear, apparel, hydration, nutrition, and race-day logistics.

### Target 5K event:

- All participants receive complimentary entry to **Big House 5K, April 19, 2020** in Ann Arbor, MI
- Completion of the target event will be confirmed by review of the official race results

### Follow-up:

- To address the exploratory aim (whether participation in the beginning run/walk program affects long-term maintenance of physical activity), we will compare self-reported physical activity over the 12 months following cardiac rehabilitation in patients who participate in the run/walk program compared to patients who do not participate in the program.

## Results

- At the time of the poster submission deadline (Dec 2019), approximately 10 patients had provided written, informed consent to participate in the study and were set to receive individualized training plans in January 2020.

## Limitations

- Single target event selected for initial feasibility study; only offering one possible target event may limit participation (e.g., potential participants unavailable on target event date)
- Recruitment limited to cardiac rehabilitation patients at Domino's Farms location
- Timing of target event necessitates training during cold-weather months, so most training sessions will likely need to be indoors and thus participants required to have access/travel to indoor training facilities

## Conclusions and Future Directions

- We were unable to evaluate the overall success of the training plan at the time of this poster deadline.
- However, if the results of this study provide initial evidence that it is possible for cardiac rehabilitation patients to successfully participate in a beginning run/walk program and complete a local 5K road running event, this will have **important implications regarding the possible options for physical activity in this population.**
- In addition, this study has the **potential to provide important preliminary evidence** to inform the **design of larger-scale studies.**
- Future studies** could potentially expand to include **patients at other sites** within Michigan Medicine, and eventually more broadly across the local community.
- Future iterations of this program could **expand to include multiple target events**, with participants able to choose 1 or more that work best for their schedules.
- If this training paradigm appears successful, **follow-up studies could consider beginning training programs for non-running events** (e.g., bike rides, triathlons).
- Future studies could also investigate the **feasibility of a similar training program in other patient populations.**

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