High Intensity Interval Training (HIIT) vs. Moderate Intensity Continuous Aerobic Training (MCT) in the Phase 2 Cardiac Rehab (CR) Setting

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Introduction:
HIIT is a popular method of exercise in healthy populations, and has been studied more recently in clinical populations as well. Our program strives to stay current with evidence-based research to have excellent outcomes and ensure our patients receive effective care. Research has shown HIIT elicits greater cardiovascular improvements as compared to MCT.

Design:
HIIT was offered to interested Phase 2 CR patients who were able to perform continuous, aerobic exercise for 20-30 minutes at >3.0METs for at least 3 exercise sessions. Patients also had to be free from a list of exclusion criteria*. Our staff of exercise physiologists provided individual instruction on HIIT participation.

*Exclusion Criteria:
Any exclusion criteria related to moderate intensity aerobic exercise, uncontrolled atrial fibrillation, severe lung disease, unstable angina, severe claudication, moderate to severe AS, patients with ICD/Pacer, fall risk patients, impaired cognition, musculoskeletal limitations, language barrier, patient refusal.

Methods:
HIIT was completed by eligible patients 2-3 sessions per week during the course of their 6-12 weeks in Phase 2 CR. Patients who completed at least 8 supervised HIIT sessions were included in the outcome data. Data was collected between 10/2016-4/2017. During that time, 20 patients completed the HIIT training protocol, while 129 patients completed traditional Phase 2 CR, emphasizing MCT. Pre and post data included BMI, peak exercise intensity (defined as the MET level achieved on the third exercise session to account for learning effect, and then again at the final session), PHQ-9 survey (depression screening tool) as well as subjective comments from the patients.

Results:
For the HIIT patients, BMI decreased from 35.7 to 34.6 (-3.1%) in women and from 29.6 to 28.9 (-2.4%) in men. Of the MCT patients, BMI decreased from 30.5 to 30.2 (-1.0%) in women and from 30.1 to 29.9 (-0.7%) in men. Peak MET level during exercise increased in the HIIT group from 4.8 to 8.8 METs (+83%). Among the MCT patients, peak MET level increased from 2.9 to 4.4 METs (+52%). The PHQ-9 survey scores improved 58% in the HIIT group, and 45% in the MCT group. Additionally, HIIT participants reported they were more engaged in their workouts compared to when they perform MCT. HIIT patients had no unexpected events (severe hypo/hypertension, significant arrhythmias, or symptoms requiring MD notification) during their cardiac rehab course. The MCT group had 6 unexpected events. The HIIT group had zero patients readmitted to the hospital during their time in CR. In the MCT group, 7.0% of the patients were readmitted.

Conclusions:
HIIT is an effective and safe option for some Phase 2 CR patients. Weight loss was enhanced and cardiovascular fitness measured in METs had greater improvement in the HIIT group. This is important to note, as an increase in aerobic capacity is strongly associated with a decrease in both cardiovascular and all-cause mortality. PHQ-9 scores also showed greater improvement in the HIIT group. Further follow up and research is needed to assess the long term improvements in patients who adhere to a regular HIIT program after discharge from CR. We plan to continue to use HIIT in our program and hope other programs will recognize the benefits and implement a similar protocol in their clinical setting.

References: