High-Intensity Aerobic Interval Training in a Patient Post Pericardiostomy While Undergoing Concurrent Radiation Therapy for Prostate Cancer

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Abstract
Limited evidence exists regarding high-intensity aerobic interval training (HIIT) in patients with recent pericardiostomy and/or undergoing concurrent radiation therapy. The purpose of this study was to present the cardiac rehabilitation intervention for a 50 year old male status post infectious pericarditis, subxiphoid pericardiostomy, and radical retropubic prostatectomy undergoing concurrent radiation therapy and androgen deprivation therapy. The patient was approved for exercise training to tolerated levels by physicians in cardiology and oncology, respectively, who followed the patient throughout the program. Moderate intensity aerobic and resistance training, flexibility training, and treadmill HIIT was concurrently administered. The patient initiated outpatient cardiac rehabilitation 13 days post pericardiostomy and completed 34 exercise sessions over the course of 20 weeks. Weekly radiation treatments totaled 36 fractions; 6480 cGy were administered to the prostatic fossa and pelvic lymph nodes. ADT was concurrently administered. The HIIT program prescription was utilized that included a rating of perceived exertion (RPE) of 15-17 (out of 20) for 3-8 (+) intervals of 60-240 seconds duration with 60-300 seconds of moderate intensity (RPE 11-13) separating each subsequent interval. Standardized assessments were performed at program initiation and completion which included a 6-minute walk test, body composition analysis via dual x-ray absorptiometry, estimated one repetition maximum leg press, the Patient Health Questionnaire (PHQ-9) depression screen, and the Dartmouth Quality of Life questionnaire.

Methods
The patient initiated outpatient cardiac rehabilitation 13 days post pericardiostomy and completed 34 exercise sessions over the course of 20 weeks. Weekly radiation treatments totaled 36 fractions; 6480 cGy were administered to the prostatic fossa and pelvic lymph nodes. ADT was concurrently administered. The HIIT program prescription was utilized that included a rating of perceived exertion (RPE) of 15-17 (out of 20) for 3-8 (+) intervals of 60-240 seconds duration with 60-300 seconds of moderate intensity (RPE 11-13) separating each subsequent interval. Standardized assessments were performed at program initiation and completion which included a 6-minute walk test, body composition analysis via dual x-ray absorptiometry, estimated one repetition maximum leg press, the Patient Health Questionnaire (PHQ-9) depression screen, and the Dartmouth Quality of Life questionnaire.

Results
Outcome data revealed a 69% improvement in six-minute walk distance, a 62% improvement in quality of life measures, and a 75% improvement in depression related qualities. The patient scored 0 on the PHQ-9 at program completion, indicating complete reversal of depressive characteristics. Additionally, a 23% increase was observed in estimated one repetition maximum leg press.

Conclusions
HIIT appears to be safe and efficacious in improving exercise capacity, quality of life, and characteristics of depression in a patient status post pericardiostomy and undergoing concurrent radiation therapy and ADT.