

## Safety and Efficacy of Exercise Training in Symptomatic Hypertrophic Cardiomyopathy Patients

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**Purpose:** Exercise training (ET) is highly beneficial in heart failure patients and has been suggested to confer significant symptomatic and functional improvements in patients with diastolic dysfunction. Accordingly, the aim of this pilot study was to examine the safety and feasibility of a structured ET program in symptomatic HCM patients.

**Methods:** We prospectively enrolled 15 HCM patients with New York Heart Association (NYHA) functional class II (47%) or III (53%) in a structured ET program at cardiac heart failure rehabilitation center. Detailed medical examination, echocardiography study and pre-enrolment symptom limited exercise stress test (EST), were performed prior to enrolment. Exercise prescription was based on heart rate reserve (HHR) obtained during EST and intensity was gradually increased on following training sessions (HHR increased from 60% to 85% as permitted by symptoms and perceived exertion).

**Results:** Enrolled patients (mean age  $62 \pm 13.2$ ) had mean LVEF of  $51\% \pm 15.8$ , and an average septum size of  $16.3 \pm 5.6$ mm. Left ventricular outflow gradient was present at rest in eight patients (mean gradient  $42.5 \pm 29$  mmHg) while six had an implantable defibrillator. Patients completed a total of 322 hours of mainly aerobic ET. No adverse events or sustained ventricular arrhythmias occurred during the training program. Functional capacity, as assessed by the percent change in maximally attained METS, improved significantly by 46% from  $4.12 \pm 1.9$  to  $6.02 \pm 2.2$  METS  $p=0.01$  (fig. 1). NYHA class improved from baseline by  $\geq 1$  grade in 6 patients (40%), while none experienced a deterioration in functional class during follow-up.

**Conclusions:** The present study is the first to show that moderately symptomatic patients with HCM can safely exercise in a cardiac rehabilitation program. Our findings suggest that symptomatic and functional gains are attainable in this high risk population. Further evaluation through a larger randomized prospective study is necessary.

