

The International 22nd Puijo Symposium
"PHYSICAL EXERCISE IN CLINICAL MEDICINE –
CRITICAL APPRAISAL OF SCIENTIFIC EVIDENCE"
June 24 - 28, 2014 Kuopio, Finland

**AEROBIC INTERVAL TRAINING ELICITS DIFFERENT HEMODYNAMIC ADAPTATIONS
BETWEEN HEART FAILURE PATIENTS WITH PRESERVED AND REDUCED EJECTION
FRACTION**

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Objectives

This investigation explored whether aerobic interval training (AIT) influences central/peripheral hemodynamic responses to exercise in heart failure patients with preserved (HFpEF) or reduced (HFrEF) ejection fraction.

Methods

One hundred twenty HF patients were randomly divided into four groups: HFpEF (EF \geq 50%) and HFrEF (EF<30%) with AIT (3-minute intervals at 40% and 80% VO_{2peak} for 30 minutes/day, 3 days/week for 12 weeks) and general healthcare groups (n=30 for each group). A noninvasive bio-reactance device was adopted to measure cardiac hemodynamics, whereas a near-infrared spectroscopy was employed to assess perfusion and O₂ extraction in frontal cerebral lobe (FC) and vastus lateralis muscle (VL), respectively.

Results

AIT for 12 weeks significantly (i) enhanced peak cardiac power output in HFrEF group and reduced E/E' ratio in HFpHF group, (ii) increased blood distribution to FC/VL and O₂ extraction by VL during exercise in HFpEF group compared to HFrEF group, (iii) heightened VO_{2peak} in either HFpEF or HFrEF group and lowered V_E/VCO_2 slope in HFpEF group, and (iv) increased the Short Form-36 physical/mental component scores and decreased the Minnesota Living with HF questionnaire score in both HFpEF and HFrEF groups.

Conclusion

AIT effectively enhances cardiac hemodynamic response to exercise in HFrEF patients while increasing the delivery/utilization of O₂ to exercising skeletal muscles/cerebral tissues in HFpEF patients. Furthermore, enhanced central or peripheral hemodynamics by AIT may contribute to improving global/disease-specific quality of life in HF patients, respectively.