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High-intensity interval training program improves body composition, exercise capacity and metabolic profile better than moderate-intensity continuous exercise in MetS patients with similar effects on ventricular repolarisation parameters

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Purpose.– To compare the long-term effects of two different modes of exercise training (moderate intensity continuous exercise [MICE] vs. high-intensity interval training [HIIT]) on QT dispersion (QTd) parameters (a marker of myocardial electrical instability), cardiovascular risk factors, and exercise capacity in patients with metabolic syndrome (MetS).

Methods.– Sixty-five MetS patients (mean age: 53 ± 9 years) were assigned to either a MICE (30 minutes at an intensity corresponding to 60% of peak power output, n = 30) or a HIIT exercise prescription (two sets of 10 minutes of repeated bouts of 15 and/or 30 sec at 80% of peak power output interspersed by 15 and/or 30 sec phases of passive recovery, n = 35) on a cyclergometer. Exercise training was performed 3 times/week during 9 months. Ventricular repolarization parameters (QT dispersion = QTd, standard deviation of QT = SDQT, relative dispersion of QT = RDQT, QT corrected dispersion = QTcd), cardiometabolic risk factors, anthropometric data and maximal exercise capacity were assessed at baseline and after the 9 months training period.

Results.– No adverse events were noted during HIIT training. QTd decreased significantly in both groups (QTd pre vs. post = 50 vs. 44 ms in MICE group, P < 0.0001; 38 vs. 34 ms in HIIT group, P < 0.01). Other ventricular repolarization parameters also improved significantly in both groups. Exercise capacity significantly increased (+ 0.9 and + 1.2 METs (P < 0.0001)) in MICE and HIIT group, respectively), as well as lipid profile. Changes in QTd were correlated with changes in METs (r = -0.21, P < 0.03), triglycerides level (r = 0.27, P < 0.02) and triglycerides/HDL-cholesterol ratio (r = 0.21, P < 0.03) for HIIT group only. No