1170
Depressed left ventricular ejection fraction measured by Teicholz method is not related to a worse functional capacity in elite athletes

A. Boraita1, A. De la Rosa 1, M. Rabadañ2, M. E. Heras 1, O. Santaella 2, A. Larumi 1, L. Pérez de Ibarra 1, J.L. Zamorano 1,2, Centro de Medicina del Deporte. CSD, Cardiology, Madrid, Spain; 2Centro de Medicina del Deporte. CSD, Phlebology, Madrid, Spain; 3Hospital Nuestra Señora de America, Cardiology, Madrid, Spain; 4Hospital Clinico San Carlos, Cardiovascular Imaging Unit, Madrid, Spain

Using left ventricular ejection fraction (LVEF) measured in elite athletes (EA) using the Teicholz’s method (TM). Nevertheless, we have noted that some EA have a depressed LVEF when using this method. Our aim was to assess if patients with depressed LVEF measured by TM also have depressed LVEF when Simonson’s method (SM) is used. A second aim was to evaluate if there is any relationship between the LVEF measured by TM and the functional capacity.

Patients: 108 (15%) had depressed LVEF (<52%) as assessed by TM. Out of them, 58 were re-evaluated (34 with normal -group 1- and 24 with depressed -group 2- LVEF by TM). They comprised our study group. LVEF was evaluated in all of them by means of SM. In all of them a maximal incremental exercise test with oxygen uptake analyzed breath by breath was measured to determine the functional capacity.

Results: LVEF by TM and SM was 69±6.6 and 58.8±6.1 in group 1 and 46.3±3.9 and 58.8±5.2 in group 2. Echocardiographic variables were similar in both groups (see table). Intraclass correlation coefficient (ICC) between the measurements of LVEF using TM and SM was poor (ICC=0.32). Nevertheless maximal oxygen consumption was similar in both groups (Group 1:54.7±6 vs. Group 2:54.7±15.1 ml/kg/min; P=0.90).

1171
Is the improved work capacity obtained by high intensity training mediated by improved myocardial function?

M. Quattrina, G. Broman, D. Parkinson, T. Lindberg, E. Jansson. The Karolinska Institue, The Department of Laboratory Medicine, Stockholm, Sweden

Background: Physical exercise is used in rehabilitation programs to improve work capacity. Conflicting results have been reported regarding the mechanisms implied in these improvements. The effects of high intensity deep water training on myocardial function were studied by means of exercise stress Tissue Velocity Echocardiography (TVE).

Methods: 20 healthy women 69±4 (SD) years old participated. They were randomly assigned to a control/training group. The training group performed deep water running/walking a week two times a week for 8 weeks. At baseline and after the intervention period a symptom-limited dynamic stress echo and cardiopulmonary exercise test was used. The VO2 progressively increased from rest to maximal work in both groups. No differences in PSV were found between groups after the intervention period (P=0.2), see figure.

1172
Morphologic ventricular adaptations to training in young soccer players and swimmers: an echocardiographic study

G. Gruppo, V. Di Tosto 1, M. Gianasso 1, L. Sfante 2, L. Toncioli 2, M.C.R. Vorno 2, G. Galanti 3, Florence, Italy; 4Umberto I Hospital, Florence, Emergency Department, Sport Medicine Agency, Florence, Italy

Background: Top-level training induces morphologic cardiac adaptations; the most significant change is cardiac hypertrophy. There are many data about so-called "athletes’ heart" in adults, but there are not yet clear the effects of the training in young subjects’ heart. The aim of this study was to assess physiological cardiac adaptations in professional soccer players and swimmers, in childhood and adolescence.

Methods: We studied 423 elite athletes (group A: 119 swimmers, group B: 304 soccer players) and 131 non-trained controls (group C), who were matched by age and body surface area (BSA). Athletes and controls were divided in ten subgroups according to BSA, starting by 1.00 m² to 1.99 m² with increment of 0.10 m². Left ventricular morphology was studied by two dimensionally guided M mode echocardiography. Parameters measured included: End-diastolic volume (EDV), End-systolic volume ( ESV), Stroke volume (SV), E/A ratio, LV/HV, LVMi: 77.30±17.73 g/m²). Considering BSA subgroups IVS was significantly larger in athletes than in controls by 1.70 m² in swimmers (A: 9.29±0.86 vs C: 8.19±0.84 mm, p<0.003), PW showed a highly significant positive difference for the two athletic groups (A: 10.89±1.06 vs C: 9.99±0.84 mm, p<0.003) and by 1.70 m² in swimmers (A: 9.29±0.86 vs C: 8.19±0.84 mm, p<0.003); PW showed a highly significant positive difference for the two athletic groups (A: 10.89±1.06 vs C: 9.99±0.84 mm, p<0.003).

Results: Echocardiographic parameters were similar in both groups (see table). Intraclass correlation coefficient (ICC) between the measurements was used. P<0.05 was considered statistically significant.

1173
The effect of combined resistance and aerobic training on the left ventricle remodeling in patients after acute myocardial infarction

L. Eblé1, V. Chalopukia, S. Nanya2, I. Tomaskova, P. Kala1, J. Spinar1, Š. Brno, Czech Republic; 2 Faculty Hospital, Cardiology, Brno, Czech Republic

Aim of study: To determine, whether the combined aerobic and resistance training can influence the process of left (LV) ventricular remodeling in patients after first acute myocardial infarction (MI).

Methods: The patients with first acute myocardial infarction were entered in 8-week aerobic (60-80% VO2max) and resistance exercise program. Before and after the program a symptom-limited dynamic stress echo and cardio pulmonary exercise test was performed. The rest and exercise ejection fraction (EF), LV volumes, WMSI and pCO2 analysis were calculated.

Results: Exercise-induced morphologic modifications occurred in young athletes. These became significant when BSA was greater than 1.60 m² (14.01±1.47 yrs), related to a stage of advanced or completed puberty.

1174
The Effect of Combined Resistance and Aerobic Training on the Left Ventricular Remodeling in Patients after Acute Myocardial Infarction

L. Eblé1, V. Chalopukia, S. Nanya2, I. Tomaskova, P. Kala1, J. Spinar1, Š. Brno, Czech Republic; 2 Faculty Hospital, Cardiology, Brno, Czech Republic

Aim of study: To determine, whether the combined aerobic and resistance training can influence the process of left (LV) ventricular remodeling in patients after first acute myocardial infarction (MI).

Methods: The patients with first acute myocardial infarction were entered in 8-week aerobic (60-80% VO2max) and resistance exercise program. Before and after the program a symptom-limited dynamic stress echo and cardio pulmonary exercise test was performed. The rest and exercise ejection fraction (EF), LV volumes, WMSI and pCO2 analysis were calculated.

Results: Exercise-induced morphologic modifications occurred in young athletes. These became significant when BSA was greater than 1.60 m² (14.01±1.47 yrs), related to a stage of advanced or completed puberty.