

## Effect of short-term aerobic exercise on cardiovascular remodelling in post-menopause women

Pascal Izzicupo<sup>1</sup>, Barbara Ghinassi<sup>1</sup>, Maria Angela D'amico<sup>1</sup>, Emanuele D'Angelo<sup>2</sup>, Sabina Gallina<sup>2</sup> and Angela Di Baldassarre<sup>1</sup>

<sup>1</sup> Dept of Medicine and Aging, <sup>2</sup> Dept of Neurosciences and Imaging, University G. d'Annunzio Chieti-Pescara, Italy

It is well known that menopause is associated with an increase of cardiovascular (CV) risk factors, including changes on metabolic profile, body composition, haemodynamic loads and cardiovascular remodelling. The latter starts with an increase of arterial elastance and early concentric left ventricular remodeling, manifested by an increment of the relative wall thickness. We investigated morphological and functional effects of short-term aerobic exercise at moderate intensity without diet restriction on cardiovascular apparatus in post-menopause women.

Seventy-six post-menopausal healthy sedentary postwomen (56± 4 yrs) underwent clinical history, physician and anthropometric exam, 12-lead electrocardiography. Echocardiography was used to assess LV geometry and systolic and diastolic functions. Relative diastolic wall thickness (RWT), midwall fractional shortening (MFS) and arterial elastance (AE) were calculated to evaluate the LV concentric remodeling, the intrinsic systolic function and the vascular load, respectively. Data were collected before and after 14 weeks of moderate aerobic exercise training (four time per week).

After the intervention program, systolic and diastolic arterial pressure, heart rate and hip circumference were significantly decreased ( $P = 0,01$ ;  $P = 0,00$ ;  $P = 0,00$ ;  $P = 0,01$ , respectively). Left ventricular mass/height 2.7, ejection fraction and MFS were higher ( $p < 0,00$ ;  $P = 0,00$ ;  $P = 0,00$ ), while relative wall thickness (RWT) and AE were lower ( $P < 0,03$ ;  $P = 0,00$ ). Mitral E wave and E/A were higher ( $P = 0,001$ ;  $P < 0,0001$ ). Left ventricular mass/height 2.7 was correlated to BMI ( $P = 0,04$ ), WC ( $P = 0,034$ ) and waist/hip ratio ( $P = 0,007$ ).

In post-menopause women aerobic exercise improves CV function (concentric remodelling, diastolic and systolic function) acting both on haemodynamic factors and body composition. Our data underline the role of non pharmacological interventions in the CV disease prevention.