

Cardiorespiratory Fitness and the Cardiometabolic Profile in Inactive Obese Postmenopausal Women: A MONET Study

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Abstract : Background: Inactive obese postmenopausal women, are at greater risk for metabolic complications. On the other hand, high levels of cardiorespiratory fitness (CRF) are associated with a lower risk of metabolic complications. Objective: To compare inactive obese postmenopausal women displaying 'lower' vs 'higher' levels of CRF for body composition, metabolic profile, inflammatory profile and measures of energy expenditure. Methods: 132 women (age: 57.6 ± 4.8 yrs; BMI: 32.3 ± 4.6 kg/m²; Peak VO₂: 17.81 ± 3.02 ml O₂•kg⁻¹•min⁻¹) were studied. They were first divided into tertiles based on their CRF. Then, women in the first (< 16.51 ml O₂•min⁻¹•kg⁻¹) and second tertiles (16.51 to 19.22 ml O₂•min⁻¹•kg⁻¹) were combined (N= 88), and compared with those in the third tertile (> 19.22 ml O₂•min⁻¹•kg⁻¹) (N= 44). Variables of interest were: Peak VO₂ (stationary bike), body composition (DXA), body fat distribution (CT scan), glucose homeostasis (fasting state and euglycemic/ hyperinsulinemic clamp), fasting lipids, resting blood pressure, inflammatory profile and energy expenditure (DLW). Results: Both CRF groups (lower= 16.0 ± 2.0 ml O₂•kg⁻¹•min⁻¹ vs higher= 21.2 ± 1.7 ml O₂•kg⁻¹•min⁻¹; $p < 0.001$) were similar for age. Significant differences were observed between groups for body composition; with lower values for body weight, BMI, fat mass and visceral fat in women with higher CRF (p between 0.001 and 0.005). Also, women with higher CRF had lower values for fasting insulin (13.4 ± 4.5 vs 15.6 ± 6.6 µU/ml; $p = 0.03$) and CRP levels (2.31 ± 1.97 vs 3.83 ± 3.24 mg/liter; $p = 0.001$); and higher values for glucose disposal (6.71 ± 1.78 vs 5.92 ± 1.67 mg/kg/min; $p = 0.01$). However, these differences were no longer significant after controlling for visceral adipose tissue accumulations. Finally, no significant difference was observed between groups for the other variables of interest. Conclusion: Our results suggest that, among inactive overweight/obese postmenopausal women, those with higher CRF levels have a better metabolic profile; which is caused by lower visceral fat accumulations.

Keywords : cardiorespiratory fitness, metabolic profile, menopause, obesity

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