

Association between exercise-induced changes in cardiorespiratory fitness and adiposity among overweight and obese youth: A meta-analysis and meta-regression analysis

- García-Hermoso A.^{a, b}
- Izquierdo M.^{a, c, d}
- Alonso-Martínez A.M.^c
- Faigenbaum A.^e
- Olloquequi J.^f
- Ramírez-Vélez R.^{a, c, d}

Abstract

The aim of this study was to determine the minimum change in cardiorespiratory fitness (CRF) required to reduce adiposity (percent body fat) in exercise programs for overweight and obese youth. Studies were identified through a systematic search of five databases. Studies were limited to randomized controlled trials (RCTs) of exercise training (e.g., aerobic, strength, concurrent) that assessed percent body fat and CRF for both exercise and control groups in overweight and obese children and adolescents. A series of meta-regressions were conducted to explore links between change in CRF (maximum oxygen consumption, ml/kg/min) and change in percent body fat. Twenty-three RCTs were included (n = 1790, 59% females). Meta-regression analysis suggested that increases of at least 0.38 mL/kg/min in CRF ($p < 0.001$) were considered to be a clinically important reduction of percent body fat (-2.30% , 95% confidence interval -3.02 to -1.58 ; $p < 0.001$; $I^2 = 92.2\%$). Subgroup analysis showed that increases of at least 0.17 mL/kg/min in CRF favored a reduction of percent body fat of -1.62% (95% confidence interval -2.04 to -1.20 ; $p < 0.001$; $I^2 = 69.9\%$). In conclusion, this change in CRF could be considered by pediatric researchers, youth fitness specialists, and health care providers to determine the effectiveness in body fat reductions through exercise. © 2020 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Cardiorespiratory fitness; Fatness; Obesity; Physical activity