



Effectiveness of Aerobic Exercise on the Reduction of Insulin Resistance Markers in Obese Pediatric Patients: An Updated Systematic Review and Meta-analysis of Randomized Controlled Trials

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INTRODUCTION

Obesity among children and teenagers has become one of the century's biggest public health issues. Insulin resistance, which is strongly linked to obesity, metabolic syndrome, and type 2 diabetes in adulthood, is of greater concern in obese children. Weight loss and exercise training have been shown to increase insulin action on target tissues in adult intervention studies.

OBJECTIVES

to synthesize available evidence from published studies on the effectiveness of aerobic exercise interventions in reducing insulin resistance markers among obese children and/or adolescents and to compare the change in fasting glucose and insulin levels between patients who underwent aerobic exercise interventions versus those who did not and to identify if there is a change in the HOMA-IR among those who underwent aerobic exercises versus the control group

METHODOLOGY

This study used a systematic review and meta-analysis; reporting was accomplished in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) Guidelines. A literature search from various search engines and electronic databases such as The Cochrane Library (CENTRAL), PubMed®, HERDIN and Google Scholar (first 1000 articles), and ResearchGate (first 100 articles) were done by the investigators

RESULTS

Change in insulin levels was reported/derived from four studies (Mitchell 2014, Kim 2011, Lee 2010, Karacabey 2009), having a total sample size of 111 patients. Aerobic exercise group had significantly lesser increase in insulin values compared to controls. The pooled mean difference in change in insulin between intervention and control is -5.97 (95% CI: --10.13 to -1.81; p<0.001).

CONCLUSION

The results of the meta-analysis showed that there was a significant change in the insulin resistance factors of those obese pediatric patients after aerobic exercises as compared to the control group. Furthermore, as a secondary outcome, BMI had significantly decreased after aerobic exercise therapy.

KEYWORDS

Obesity, Aerobic exercise, Insulin resistance markers, Fasting glucose, Insulin, Body mass index