# THE DOSE-RESPONSE EFFECT OF EXERCISE ON BODY WEIGHT REDUCTION AMONG OVERWEIGHT AND OBESE ADOLESCENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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# ABSTRACT

Obesity is the most obviously visible public health issue that has reached epidemic proportions, but it is still mostly ignored. According to the global burden of disease, more than 2.8 million people die each year as a result of being overweight or obese. Obese and overweight among adolescents are at epidemic levels. Physical inactivity is linked to adolescent overweight and obesity. Adequate exercise in children and adolescents maintain a healthy body weight improving health; however, it is dose dependent. To explore these area, systematic review was conducted in PubMed and Google scholar to investigate systematically the dose-response effect of exercise on body weight reduction among overweight and obese adolescents. Review team screened 1096 journal articles and selected 16 articles involving 1041 participants. Inclusion criteria were as follows; randomized controlled trial, planned exercise program either alone or in combination with others, studies within 10 years (2012-2022), overweight or obese adolescents, the control group did not receive any structured exercise or other interventions, aimed at increasing physical activity, outcome in BMI. Three independent reviewers used PEDro scale to estimate the risk of bias and the methodological quality in eligible studies. Standard mean differences (SMD) were computed to investigate the effects of exercise training on body weight changes. Review Manager V.5.4.1 was used to perform meta-analysis. In general, exercise had a statistically significant reduction in BMI according to a random effect model [SMD = -0.37, 95% CI = -0.63, -0.10]. Vigorous exercise [ SMD = -0.45, 95% CI = -0.83, -0.08], HIIT and MICT [SMD = -0.75, 95% CI = -1.44, -0.06], aerobic exercise [ SMD = -0.32, 95% CI = -0.63, -0.01], 6–10 weeks intervention [ SMD = -0.64, 95% CI = -1.02, -0.26], three times a week [SMD = -0.48, 95% CI = -0.79, -0.16], 30-60 min per exercise session [SMD = -0.45, 95% CI = -0.83, -0.07] were also significant effect on weight reduction. Effects of exercise varied in gender and regional background. Recommendations of exercise in overweight and obese individuals, thus, include all types of exercise, including moderate to vigorous intensity exercise programs, 30-60 minutes per each session, three times per week, and 6-12 weeks duration. Further studies are needed to confirm the effects of these exercise interventions in overweight and obese individuals depending on gender and types of exercise.