Exercise and BMI z-score in Overweight and Obese Children and Adolescents: A Systematic Review and Network Meta-Analysis of Randomized Trials

Children living with overweight or obesity often experience further complications in both childhood and adulthood. Previous reviews of exercise interventions on obesity treatment have been limited by the number and quality of published articles. The purpose of this systematic review was to “examine the effects of selected types of exercise (aerobic, strength training, [or] both) on BMI z-score” in children living with overweight and obesity by using network meta-analysis. This form of analysis allows for “multiple treatments (that is, three or more) [to be] compared using both direct comparisons of interventions within randomized controlled trials and indirect comparisons across trials based on a common comparator.”

34 studies fit the inclusion criteria. Some of the studies included more than one exercise group, creating a total of 40 intervention groups. This meta-analysis further separated the interventions into aerobic exercise (25 groups), strength training (5 groups) or both (11 groups). This study suggests that aerobic exercise with or without strength training can treat children living with overweight or obesity by reducing their BMI z-score. The authors reported the results of the strength-training only interventions as inconclusive, which may be attributed to subsequent increases in lean muscle mass. Due to variability in study design (effect sizes, implementation of interventions, and statistical tests used), “a need exists for additional, well designed randomized trials before certainty is determined.”