

Modifying Cardiometabolic Disease Risk Factors in Urban Primary School Children: Three Different Exercise Interventions

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Abstract : Background: Exercise is a primary form of preventing and improving cardiometabolic disease risk factors; however specific exercise variables and their associated health benefits in children are inconclusive. A preliminary study revealed that different exercise variables may improve particular cardiometabolic health benefits. Objectives: This study further investigated the specific cardiometabolic health benefits associated with three isocaloric exercise interventions set at different intensities. Methods: Hundred-and-twenty (n = 120) participants between the ages of 10 - 14 years old were assigned to four different study groups 1. High intensity interval training (HIIT) at > 80% MHR 2. Moderate intensity continuous training (MICT) at 65% - 70% MHR 3. Alternative intensities (ALT) of HIIT and MICT 4. Control group. Exercise interventions were designed to generate isocaloric workloads of ~154.77 kcal per session, three times per week for five weeks. The one-way ANOVA test established comparisons between group means. Post hoc tests were calculated to determine specific group differences. Results: Although, all exercise groups improved cardiometabolic health, the MICT group showed greater improvements in fasting glucose (-9.30%), whereas cardiorespiratory fitness increased most by 31.33% (p = 0.000) within the HIIT group. Finally, ALT group recorded overall superior and additional cardiometabolic health benefits compared with both MICT and HIIT groups. Conclusion: The findings of this study indicate that superior benefits may be elicited when combining and alternating MICT and HIIT. These results provide specific exercise recommendations for achieving optimal and substantial cardiometabolic health benefits in children which will contribute towards achieving the health-related Sustainable Development Goals for 2030.

Keywords : cardiometabolic disease risk factors, exercise, pediatrics, interventions

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