

# School-based exercise programs and cardiometabolic risk factors: A meta-analysis

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**CONTEXT:** The effects of school-based physical activity (PA) programs on different cardiometabolic risk factors and the most appropriate features of PA programs to achieve maximum effectiveness are unclear. **OBJECTIVE:** To provide a comprehensive synthesis of the effectiveness of school-based PA interventions on cardiometabolic risk factors in children. **DATA SOURCES:** We identified studies from database inception to February 22, 2018. **STUDY SELECTION:** We selected studies that were focused on examining the effect of school-based PA interventions on cardiometabolic risk factors in children. **DATA EXTRACTION:** Random-effects models were used to calculate the pooled effect size (ES) for the included cardiometabolic risk factors (waist circumference [WC], triglycerides, total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, systolic blood pressure and diastolic blood pressure (DBP), and fasting insulin and glucose). **RESULTS:** Nineteen randomized controlled trials (which included 11 988 children aged 3-12 years) were included in the meta-analysis. School-based PA programs were associated with a significant small improvement in WC (ES = -0.14; 95% confidence interval [CI]: -0.22 to -0.07;  $P < .001$ ), DBP (ES = -0.21; 95% CI: -0.42 to -0.01;  $P = .040$ ), and fasting insulin (ES = -0.12; 95% CI: -0.20 to -0.04;  $P = .003$ ). **LIMITATIONS:** Authors of few studies described the implementation conditions of their interventions in detail, and compliance rates were lacking in most studies. In addition, results by sex were provided in a small number of studies. **CONCLUSIONS:** School-based PA interventions improve some cardiometabolic risk factors in children, such as WC,

DBP, and fasting insulin. © 2018 by the American Academy of Pediatrics.