Physical activity interventions for children and young people with Type 1 Diabetes Mellitus: A systematic review with meta-analysis

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Background: Young people with Type 1 Diabetes Mellitus (T1DM) are advised to engage in regular physical activity to delay the onset of cardiovascular disease.

Objectives: To synthesise evidence from randomised and non-randomised studies of physical activity interventions in children and young people with T1DM to explore clinically relevant health outcomes and to inform physical activity promotion.

Methods: We searched CINAHL Plus, the Cochrane Library, EMBASE, MEDLINE, PsycINFO, SCOPUS, SportDiscus and Web of Science between October and December 2012. Eligible articles included -off activity session. Physiological, psychological, behavioural or social outcomes were those of interest.

Results: 26 articles (10 randomised and 16 non-randomised) published between 1964 - 2012 were reviewed. Although there was heterogeneity in study design, methods and reporting, 23 articles reported at least one significant beneficial health outcome. Meta-analyses showed potential benefits of physical activity on HbA1c (SMD -0.52, 95% CI -0.97 to -0.07, p = 0.02), BMI (SMD -0.41, 95% CI -0.70 to -0.12, p = 0.006), triglycerides (SMD -0.70, 95% CI -1.25 to -0.14, p = 0.01) and total cholesterol (SMD -0.91, 95% CI -1.66 to -0.17, p = 0.02).

Conclusion: Physical activity interventions have the potential to delay cardiovascular disease, but there is a lack of studies that are underpinned by
psychological behaviour change theory, promoting sustained physical activity and exploring psychological outcomes. There remains a lack of knowledge of how to promote physical activity in young people with T1DM.