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The ToyBox Pre-School Obesity Prevention Intervention for use in Scotland: Results of a Feasibility Cluster Randomised Controlled Trial (cRCT)

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Objective: The ToyBox intervention was successful at increasing physical activity and reducing sedentary behaviour in pre-school children across Europe. The intervention involves teacher-led activities over 18 weeks which aim to increase physical activity, reduce sedentary behaviour, and promote healthy snacking and water consumption. We adapted the Toybox Europe intervention for preschools in Scotland using a co-production approach. This study aimed to test the feasibility of our adapted intervention in children attending preschools in relatively deprived areas of Glasgow, Scotland, who are considered hard to reach.

Methods: The feasibility cRCT involved six preschools (three intervention, three control); control was usual curriculum. Participants were 3-5 year old children attending preschools in Glasgow, UK, and their parents. Outcomes of interest were recruitment rates, willingness to be randomised, attrition rates, questionnaire completion rate and acceptability of measurement methods. Measurements were taken at baseline and 18 weeks; anthropometry, physical activity, sleep and sedentary time using the activPal accelerometer (wear time = 7 days; 3 days considered valid), body composition via bioelectrical impedance analysis (BIA), and measures of diet and home screen time via parental questionnaire.

Results: Cluster level recruitment rate was 9% (11/112 preschools) and the individual level recruitment rate was 18% (42/231 children). 36 children (16 girls) provided at least one valid measurement at baseline and follow-up (attrition rate = 16.6%). All clusters were willing to be randomised.

Anthropometric measures were acceptable and feasible. Parental questionnaire response rates were low (20%). 61% of the sample provided valid accelerometer data at baseline, 27% for baseline and follow-up. BIA was not feasible due to poor participant compliance with protocol.

Conclusions: Recruitment rates of both preschools and children was lower than anticipated compared with Toybox Europe. However, for those children who took part, the adapted intervention and the measurement methods appeared acceptable and feasible. An ongoing process evaluation will help identify ways in which recruitment of preschools, and recruitment and retention of participants, can be maximised in areas of deprivation.