ORAL: Title: A school-based intervention to improve functional movement and fundamental movement skills in adolescent youth: Evaluating the effectiveness of Project FLAME

Background: School-based physical education (PE) interventions are considered to be an effective method for improving childhood and youth motor competence. This study aimed to evaluate the effectiveness of Project FLAME (Fundamental and Functional Literacy for Activity and Movement Efficiency), a multi-component, school-based PE intervention targeting improving fundamental movement skills (FMS) and functional movement in adolescent youth. Methods: Using a non-randomized controlled trial, a sample of 363 participants (56% male, mean age: 14.04 + 0.89 years old) were recruited from three mixed-gender, sub-urban schools (two intervention; one control) in Cork, Ireland, for baseline data collection, followed by a 13-week consecutive intervention roll out, and post-test data collection. The Project FLAME intervention included four major components, specifically the i) specialist PE teacher component, ii) kinaesthetic classroom component, iii) student component and iv) digital literacy component. Primary outcome measures evaluating the effectiveness of the Project FLAME intervention included the assessment of ten FMS (including locomotor and object control subsets), in conjunction with the observable, behavioural components from three established testing batteries (Test of Gross Motor Development (TGMD), TGMD-2, and the Get Skilled: Get Active manual), as well as the seven tests within the Functional Movement Screen (FMS™). Linear mixed models were used to analyse the effect of the intervention with two main effects, treatment and time, and their hypothesised interaction. Analyses were adjusted for participants' gender, age, grade and BMI score. Results: The intervention group significantly improved in their locomotor ($p = .001$), object- control ($p = .002$), and overall gross FMS ($p = .001$), from pre- to post-intervention. Furthermore, significant intervention effects across time for locomotor score ($p = .003$) and overall gross FMS ($p = .002$) were observed, when compared with a control group. The observed effects were significant and positive for all participants in the intervention group, regardless of gender, age, grade, or BMI. The intervention group also significantly improved their overall FMS™ composite score ($p = .001$), however, a statistically significant treatment- time interaction effect was not found between groups ($p = .981$). Discussion: Findings confirm that the Project FLAME multi-component, school-based intervention was successful at improving adolescent locomotor and overall gross FMS motor competence, when compared with a control group, resulting in significant treatment-time interactions. A whole-school approach, including a structured PE component, emphasising FMS and functional movement appears effective for developing motor competence in adolescent youth.