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Improving Health, Physical Fitness, and Academic Performance Through Active Learning

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Purpose: This study aimed to improve physical fitness, health, and academic performance in primary school children through implementation of a daily 45-minute school-based physical activity (PA) intervention integrated into regular classroom learning. In addition to standard physical education lessons, academic content was delivered using physically active teaching methods and adapted educational materials. The study was conducted within the 'Health and Academic Performance with Happy Children' ERASMUS+ project and on the background of the Norwegian 'Health Oriented Pedagogical Project' (HOPP).

Methods: A non-randomised controlled intervention study was conducted in Graz, Austria, involving 475 children from three public primary schools – two intervention schools and one control school. Baseline and follow-up assessments were conducted over two academic years. Physical fitness measures included endurance, hand and leg strength, coordination, balance, and flexibility. Anthropometric data (e.g. weight, height, leg length, waist, hip, and thigh circumferences), health parameters, subcutaneous adipose tissue (via ultrasound), and urine samples were collected. Cognitive abilities, including executive function, language, and mathematics skills, were also assessed.

Results: At baseline, a high prevalence of overweight and obesity (>32% in two schools) was observed, with significant disparities in physical fitness and health indicators linked to parental socio-economic status (SES). While for changes in strength and coordination the results were inconclusive, the intervention led to significant and sustained improvements in endurance, independent of SES. Endurance increased significantly from baseline to both follow-ups in the two intervention schools compared to the control school ($F(4, 546) = 18.39$, $p < 0.001$). Notably, in children who improved their endurance, the intervention led also to a greater improvement in executive functions ($F(2, 145) = 3.745$, $p = 0.026$).

Conclusion: This integrated physical activity intervention demonstrated measurable benefits on children's physical health, fitness, and cognitive performance already after one academic year. Implementing physical activity into the school curriculum offers an inclusive, cost-effective, and sustainable strategy for health promotion and academic enhancement. Early interventions are crucial to ensure equitable access for children across all socio-economic backgrounds and abilities.