

The effects of unstructured outdoor play over one academic year on motor coordination and self-esteem in elementary-aged children

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The purpose of this study was to determine the physiological and psychological differences between 4th and 5th-grade children from two school districts with varying amounts of recess. District 1, the recess intervention group (N = 148), had 40 minutes of daily recess, while District 2, the control group (N = 115), had 20 minutes or less of daily recess. The physiological assessments included the Körperkoordinationstest für Kinder (KTK) to assess motor coordination and Bioelectrical Impedance Analysis (BIA) to assess body composition. The psychological components included the KID-KINDL to evaluate self-esteem and the Perceived Physical Ability Scale (PPASC) to evaluate physical self-efficacy. Parent consent and child assent were obtained prior to the children's participation during the physical education class. Children had to complete all assessments to be included in the analysis. The KID-KINDL (Cronbach's $\alpha = 0.695$) and the PPASC (Cronbach's $\alpha = 0.729$) showed good reliability. A MANCOVA was used to analyze group, sex, and grade differences on all assessments while controlling for body fat. Results showed no main differences among the motor coordination subtests, but an interaction effect was found for group by sex by grade for one of the physical subtests. Fifth-grade control females outperformed all other groups in the single-leg hop subtest $F(1, 263) = 4.351$, $p = 0.04$. A Pearson Product Correlation analysis further showed a significant relationship ($r = 0.294$, $p < 0.001$) between self-efficacy and motor quotient scores determining that the higher the children's self-efficacy is, the better they perform on their motor coordination assessments. These findings suggest that recess may play an important role in developing motor coordination and self-efficacy skills in children, as well as demonstrating recess offered daily for 20 minutes or more may

promote these physical and psychological benefits for all students.