

The effects of the LiINK Project over one academic year on muscular strength, neuromuscular control, injuries, and resilience in fourth and fifth grade elementary school children

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The primary purpose of the current study explored muscular strength (MusS) and neuromuscular control (NC), injury, and resilience score differences between Group 1 (45 minutes recess) (N=89) and Group 2 (30 minutes of recess) (N=84) engaged in the LiINK Project, a multi-recess intervention. The groups were further split by 4th (G1 N=47, G2 N=51) and 5th (G1 N=42, G2 N=42) grade children from three different intervention elementary schools in Texas. MusS assessments included the dynamometer grip strength, single leg hop test, the push-up test, and the standing broad jump. NC was assessed using the side-step test. A Qualtrics survey assessed injuries, specifically fractures and tears, and resilience through the Child and Youth Resilience Measure. Parent consent and child assent were gathered before participation. Assessments were conducted in a three-station gym rotation. Physical test results were matched to Qualtrics survey responses by the child's name. Data from children who withdrew before completing all assessments were excluded. An ANOVA was utilized to analyze differences based on sex and grade for MusS, NC, resilience, and injury scores. Results indicated significant differences for the push-up test, $F(1, 180) = 28.995, p < 0.001$, and side-step test, $F(1, 180) = 18.587, p < 0.001$, with Group 1 outperforming Group 2. Grip strength was not significant but approached significance, $F(1, 180) = 3.187, p = 0.076$, while resilience did not differ between groups, $F(1, 180) = 1.573, p = 0.211$. The findings suggest that increased accumulated recess time in Group 1 positively influenced performance on the push-up and side-step tests, highlighting children in schools that had 45 minutes of daily recess with the LiINK intervention

longitudinally continue to increase in MusS and NC patterns compared to children in schools who participate for 30 minutes daily.