

Examining the association between object control skills and cardiorespiratory endurance in children 8-12 years of age *by*

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Motor skill competence promotes successful participation of children in Physical Activity (PA), bringing gains in physical fitness (PF) longitudinally (Barnett, Morgan, Van Beurden, Ball, & Lubans, 2011). Research has shown that characteristics such as body composition and performance in skills that require perceptual motor integration (e.g., object control skills) can be used as valid indicators of a child's fitness trajectory (Stodden, Gao, Goodway, & Langendorfer, 2014). The aim of the present study was to examine associations between object control skills and cardiorespiratory endurance in primary school children. Participants were 258 boys and 233 girls [aged 8-12 years (9.97 ± 1.32)] from different Greek regions. The PACER test was used to evaluate their cardiorespiratory endurance and observation criteria drawn from Canadian Assessment of Physical Literacy (CAMSA) tool (Longmuir et al., 2017) recorded the quality of their performance in catching (no ball dropping or trapping), throwing (overhand throw, transfer of body weight), and kicking (smooth approach, elongated step). Hierarchical regression was used to assess the relative

contribution of individual characteristics (age, weight, height) to children's cardiorespiratory endurance after controlling for their competence in object control skills. In the first step of hierarchical regression, age, weight and height were entered as predictor variables. This model was statistically significant [$F(3, 471) = 56.124$; $p < .001$] and explained 25% of variance in cardiorespiratory endurance. All three factors made a significant unique contribution to the model. After the entry of object control skills at Step 2, the total variance explained was 34% [$F(8, 466) = 31.986$, $p = .000$], with object control skills explaining additional 9% of variance in cardiorespiratory endurance [$F(5, 466) = 13.158$, $p < .001$]. In the final adjusted model, kicking skills were statistically significant, with smoothness of body movement recording a higher Beta value ($\beta = .161$, $p < .001$), than step length ($\beta = .151$, $p < .001$). Among the throwing and catching skills, only the transfer of body weight was statistically significant ($\beta = .096$, $p = .015$). The results suggest that children's object control skill competence is associated with their ability to participate in sporting activities for longer periods of time. From a sport pedagogy perspective, such evidence supports the appropriateness of using motor skill training as an indirect strategy for the promotion of youth health related PF parameters.

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