

Sex differences on the relation among gross motor competence, cognition, and academic achievement in children

- Fernández-Sánchez, Antonio^{a, b};
- Redondo-Tébar, Andrés^a;
- Sánchez-López, Mairena^{a, b} [Send mail to Sánchez-López M.](#);
- Visier-Alfonso, María Eugenia^{a, c};
- Muñoz-Rodríguez, José Ramón^{d, e};
- Martínez-Vizcaíno, Vicente^{a, f}

Abstract

An association between gross motor competence (GMC) and academic achievement (AA) has been described, but the potential mechanisms behind this association are still unknown. It is not known either whether these mechanisms are similar for boys and girls. The aim of this study was to analyse whether the association between GMC and AA is mediated by executive functions (EFs), and to investigate whether this mediation differs by sex. This cross-sectional study involved 451 children aged 8 to 10 (234 girls; mean age 9.95 ± 0.59). The Movement Assessment Battery for Children-Second Edition (MABC-2), NIH Toolbox, and grades in language and mathematics were used to test GMC, EFs, and AA, respectively. Multifactorial structural equation model (SEM) was used to evaluate a possible relation between variables, controlling for confounders. The differences by sex were examined using a multi-group SEM approach. The results showed that EFs acted as a full mediator of the relationship between GMC and AA in boys ($\beta = 0.14$, $p = 0.012$) but not in girls ($\beta = 0.10$, $p = 0.326$). These results show that the benefit of GMC on AA is mediated by EFs in boys but not in girls. Nevertheless, these conclusions should be carefully considered due to the cross-sectional nature of the study. © 2022 The Authors. Scandinavian Journal of Psychology published by Scandinavian Psychological Associations and John Wiley & Sons Ltd.

Author keywords

Academic achievement; children; cognition; mediation analysis; motor competence; structural equation model