

## **A Systematic Review of Longitudinal and Experimental Evidence Providing New Insight for Motor Competence and Health**

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In 2008, a conceptual model explaining the role of motor competence (MC) on children's physical activity (PA), health-related fitness, weight status and perceived MC was published by Stodden et al. The purpose of this review is to systematically compile mediation, longitudinal and experimental evidence in support of this model. Searches were undertaken for each pathway of interest using six relevant databases. Potential articles were identified through abstract and title checking (N = 585), then screened (n = 152), with 43 articles identified for extraction. Studies needed to: be original, peer-reviewed, include typically developing children and adolescents first assessed between 2 and 18 years and objective assessment of gross MC and at least one other model variable. Strength of evidence was calculated for each pathway in both directions by dividing the proportion of studies indicating a significantly positive pathway in the hypothesized direction by the total amount of studies investigating that pathway. Classifications were no association (0–33 %), indeterminate/inconsistent (34–59 %), or a positive "+" or negative "-" association (≥60 %). The latter category was classified as strong evidence (i.e., ++ or –) when four or more studies found an association. If the total number of studies in a domain of interest were three or less, this was considered insufficient evidence. There was strong evidence in both directions for a negative association between MC and weight status. There was indeterminate evidence between MC and fitness and indeterminate evidence from MC to PA and no evidence for the reverse. There was insufficient evidence for the MC to perceived MC pathway. There was strong positive evidence for the fitness-mediated pathway in both directions. There was indeterminate evidence for the perceived MC-mediated pathway from PA to MC and no evidence for the reverse. To test the whole model, the field needs robust longitudinal studies with multiple time points, including all variables in the model and accounting for confounding factors. Funding source: N.C.V is supported by the Coordination for the Improvement of Higher Education Personnel – CAPES-Print Brazil. V.P.L is supported by national funding through the Portuguese Foundation for Science and Technology, I.P., under project UID04045/2020 L.P.R is partially supported by the Portuguese Foundation for Science and Technology, I.P. under Project UID/DTP/04045/2019.