

## **Investigating the construct of motor competence in middle childhood**

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## Abstract

Literature has shown that motor competence plays a crucial role in children's physical activity engagement (Robinson et al., 2015). In light of this, different assessment tools have been developed to capture and monitor motor competence across childhood. Motor assessments generally produce a composite score –consisting of diverse motor skills– under the assumption that motor competence is a one-dimensional construct. Although a one-dimensional structure among a wide range of motor items has been shown in early childhood (Utesch et al., 2016), it is still unclear if this holds true in middle childhood which is marked by an increased participation in sports and other types of physical activities. The aim of the study is therefore to examine the structure of motor competence in children aged 6-11 years using a large item set. A total of 2538 children completed the Bruininks-Oseretsky Test of Motor Proficiency – 2nd Edition Short Form (BOT-2 SF). The BOT-2 SF consists of 14 skill items and covers different motor domains: fine motor precision, fine motor integration, manual dexterity, bilateral coordination, balance, running speed and agility, upper-limb coordination and strength. In accordance with the BOT-2 SF manual, point scores were computed for each item. Early analyses using the polytomous Rasch model showed that many items demonstrate unordered threshold parameters, possibly due to ceiling effects. However, after introducing empirical categories for each item, Rasch modeling revealed a one-dimensional structure with 12 items, as shown by the item fit statistics ( $.09 < p < .79$ ). The study provides some proof of a one-dimensional construct underlying motor assessment in middle childhood when adopting a test-theoretically sound scoring system. Continued efforts should be made to ensure that valid composite scores are used in motor assessment in order to have better understanding of motor competence across childhood.

## References

- Robinson, L. E., Stodden, D. F., Barnett, L. M., Lopes, V. P., Logan, S. W., Rodrigues, L. P., & D'Hondt, E. (2015). Motor competence and its effect on positive developmental trajectories of health. *Sports Medicine*, 45(9), 1273–1284.
- Utesch, T., Bardid, F., Huyben, F., Strauss, B., Tietjens, M., De Martelaer, K., ... Lenoir, M. (2016). Using Rasch modeling to investigate the construct of motor competence in early childhood. *Psychology of Sport and Exercise*, 24. <https://doi.org/10.1016/j.psychsport.2016.03.001>