

**Estimation of the Best Method for the Calculation of the Subscales and Total Scores of the Motor Competence Assessment (MCA)**

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The MCA (Motor Competence Assessment) is an instrument to assess motor competence (MC) along the lifespan. For the first time, we can assess MC from childhood to old age using the same instrument, without an age ceiling effect and of feasible and objective execution. After establishing the MCA construct validity, the six tests' normative values from childhood to young adulthood were published, and recently, the invariance of the MCA across age groups was assessed. The aim of this study is now to find the best method for the calculation of the subscales and total MCA scores. One thousand participants representing four age group subsamples (3-to-6, 7-to-10, 11-to-16, and 17-to-22 years) with 250 participants each, were assessed on the MCA, and their results on the sub-scales were calculated according to three different methods: (1) a general factor score index, where each item's weight is derived from its factor loading of the MCA model; (2) an age-group factor score index, where each item's weight is derived from its factor loading of the respective age-group MCA model; and (3) an equal score index with a non-weighted participation of each test for the subscale calculation. Each subscale was calculated using the three tested methods, and the results compared using bivariate correlations and intraclass correlations for the all sample and for each age-group sub-sample. Results showed a very high agreement between the three methods tested with intraclass correlations and bivariate correlations values higher than 0.99. These results allow to conclude for the use of the simpler method for calculating the MCA subscales, there is to use equal weights for each test. In conclusion we suggest that, after being transformed into age and sex normative values (percentiles), an average of the two tests of each MCA subscale can be used to adequately represent the individual motor competence on that category (locomotor, stability, or manipulative), and a total MCA score can be found by the average of all six tests. Funding source: LPR and VPL work was supported by the Portuguese Science Foundation (FCT) under Grant number UID04045/2020. RC work was supported by the Portuguese Foundation for Science and Technology, Grant UIDB/00447/2020 to CIPER.