

Medicine & Science in Sports & Exercise:

May 2009 - Volume 41 - Issue 5 - p 540

doi: 10.1249/01.MSS.0000356197.48017.6d

G-24 Free Communication/Poster - Observational Studies in Diverse Populations: MAY 30, 2009 7:30 AM - 11:00 AM:ROOM: Hall 4F

Modeling Changes In Gross Motor Coordination Of Portuguese Children: Effects Of Bmi And Physical Activity: 3033: Board #180 May 30 9:30 AM - 11:00 AM

Maia, José A.; Coelho, Renata; Silva, Rui; Seabra, Andre; Lopes, Vitor



Author Information

Faculty of Sport, Porto, Portugal.

Email: jmaia@fade.up.pt

(No relationships reported)

Adequate levels of gross motor coordination (GMC) are relevant for children to express their motor and cognitive skills. Longitudinal data concerning the influence of BMI and physical activity in GMC is scarce

PURPOSES: (1) to model annual changes in GMC of children, and (2) to evaluate the importance of time varying predictors: body mass index (BMI) and physical activity levels (PA).

METHODS: sample size comprises 285 children (143 boys; 142 girls) followed longitudinally for 4 years starting at the age of 6. GMC was assessed with the KTK (Körperkoordinationstest für kinder) comprising 4 items: backward balance (BB), jumping sideways (JS), hopping on one leg (HL), and shifting platforms (SP). PA was evaluated with the Godin and Shephard questionnaire. BMI was computed as the ratio of weight (kg) to height²(m). Data analysis was done within the multilevel framework using HLM 6.0. Statistical evaluation of nested models was sequential using Deviance as a test statistic. Reliability estimates for all variables was computed with the intraclass correlation coefficient (R).

RESULTS: data showed high reliability for GMC tests ($0.75 < R < 0.91$), PA ($0.65 < R < 0.80$), height and weight ($R = 0.99$). All GMC tests and BMI showed significant ($P < 0.05$) mean increases with age. PA evidenced a small decline over the 4 years, more evident in girls (from 41.81 ± 2.97 Met/15Min/Week at 6 years to 33.36 ± 1.71 at 9 years). A series of nested models for each GMC test showed that data behaved in a non linear fashion, with baseline values being positively associated with annual changes in motor coordination. Across the 4 years, BMI shows a negative ($P < 0.05$) impact in GMC, but PA showed a

significant ($p < 0.05$) positive association.

CONCLUSIONS: (1) boys and girls show similar significant increases in GMC from 6 to 9 years of age; (2) BMI is negatively associated with GMC changes; (3) on the contrary, PA is positively associated with motor coordination; (4) baseline values of GMC are positively associated with their changes; (5) even if BMI induces a reduction in GMC performance, a protective effect is evident for those children who are at the upper quartile of the distribution of PA across the 4 years. This shows the importance of promoting moderate to high levels of PA to induce relevant increases in GMC even if one is overweight.

©2009 The American College of Sports Medicine