Relationship between Physical Activity Level and Functional Movement in 16-years old Schoolchildren: A Multilevel Modelling Approach

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***Abstract*—** As a part of the CRO-PALS longitudinal study, this investigation aimed to examine the association between different levels of physical activity (PA) and movement quality in 16-years old schoolchildren. The total number of participants in this research was 725. Movement quality was assessed via the Functional Movement Screen (FMSTM), and the PA level was estimated using the School Health Action, Planning, and Evaluation System (SHAPES) questionnaire. In addition, body fat and socioeconomic status (SES) were assessed. In order to investigate the association between total FMS score and different levels of PA, multilevel modeling was employed for boys (n=359) and girls (n=366) separately. All models were adjusted for age, body fat, and SES. Among boys, MVPA, MPA, and VPA were not significant predictors of the total FMS score (β=0.000, p=0.78; β=-0.002, p=0.455; β=0.004, p=0.158, respectively). On the contrary, among girls, VPA and MVPA showed significant effects on the total FMS score (β=0.011, p=0.001, β=0.005, p=0.006, respectively). The findings of this research provide evidence that the intensity of PA is a minor but relevant factor in describing the association between PA and movement quality in adolescent girls but not in boys. This means that the PA level does not guarantee optimal functional movement patterns. Therefore, practicing functional movement patterns in an isolated manner and at moderate to vigorous intensity could be beneficial in order to reduce the risk of injury incidence and potential orthopedic abnormalities in later life.

***Keywords*—** functional movement screen, fundamental movement patterns, movement quality, pediatric

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