

The Comparison of Physical Fitness across Age and Gender in the Lithuanian Primary School Students: Population-Based Cross-Sectional Study

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Abstract : Background: Gender differences in physical fitness were tracked in many studies with lower effect in preschool children and increasing difference among genders across age. In Lithuania, on a population level, secular trends in physical fitness were regularly observed each ten years for the last two decades for 11-18 years old students. However, there is apparently a lack of such epidemiological studies among primary school students. Assessing and monitoring physical fitness from an early age is of particular importance seeking to develop and strengthen physical abilities of youths for future health benefits. The goal of the current study was to indicate age and gender differences in anthropometric measures, musculoskeletal, motor and cardiorespiratory fitness in Lithuanian primary school children. Methods: The study included 3456 1-4th grade students from 6 to 10 years. The data reliably represents the population of primary school children in Lithuania. Among them, 1721 (49.8 percent) were boys. Physical fitness was measured by the 9-item test battery, developed by Fjortoft and colleagues (2011). Height and weight were measured and body mass index was calculated. Student t test evaluated differences in physical fitness between boys and girls, ANOVA was performed to indicate differences across age. Results: All anthropometric and fitness means that were identified as significantly different were better in boys than in girls and in older than younger students ($p < .05$). Among anthropometric measures, height was higher in boys aged 7 through 9 years. Weight and BMI differed among boys and girls only at 8 years old. Means of height and weight increased significantly across all ages. Among musculoskeletal fitness tests, means of standing broad jump, throwing a tennis ball and pushing a medicine ball were different between genders within each age group and across all ages. Differences between genders were less likely in motor fitness than in musculoskeletal or cardiorespiratory fitness. Differences in means of shuttle run 10 x 5 test between genders occurred at age 6, 9 and 10 years; running 20 m at age 6 and 9 years, and climbing wall bars at age 9 and 10. Means of Reduced Cooper test representing cardiorespiratory fitness were different between genders within each age group but did not differ among age 6 and 8 as well as 7 and 8 years in boys, and among age 7 and 8 years in girls. Conclusion: In general, the current study confirms gender differences in musculoskeletal, motor and cardiorespiratory fitness found in other studies across the world in primary school and older children. Observed gender differences might be explained by higher physical activity in boys rather than girls. As it is explained by previous literature, older boys and girls had better performances than younger ones, because of the components of fitness change as a function of growth, maturation, development, and interactions among the three processes.

Keywords : primary school children, motor fitness, musculoskeletal fitness, cardiovascular fitness

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