

Physical activity of children and adolescents in Luxembourg during school, physical education and leisure time: An accelerometry-based study

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Objectives: Due to its great importance for development and health, the physical activity (PA) of children has become a key issue in research over the last decade. Simultaneously, the measurement of PA has been strongly improved through the development of user-friendly and reliably working accelerometer, which allow to track PA over several consecutive days in an objective way. Although the benefits of accelerometry are well documented also for children (e.g. Hager et al., 2015), especially cross-national studies such as the Health Behaviour in School-aged Children (HBSC) are still using questionnaires and are focused only on overall or leisure time PA. This study as part of the PALUX project (Physical Activity of Children and Youth in Luxembourg) aims to (1) measure children's daily PA patterns using up-to-date accelerometers while (2) differentiating between PA in school, physical education and leisure time.

Methods: In total, 242 children and adolescents (134 girls and 108 boys) aged from 10-18 years from 9 different schools in Luxembourg wore the ActiGraph GT3X-BT- accelerometer at the hip for a period of seven consecutive days. Total time in moderate-to-vigorous PA (MVPA) was calculated using the cut-of points from Evenson et al. (2008). Time spent in school and physical education were determined based on timetables provided by the schools.

Results: Mean overall MVPA of participants over seven consecutive days was 307.6 min, with 98.4 min (32 %) during school time and 190.7 min (62 %) during leisure time. Only 16.7 min (6 %) of the school time MVPA were performed in physical education. Boys had more overall MVPA than girls (367.9 vs. 258.9 min, $t(240) = 6.76$, $p < .01$) due to significant differences in all areas considered here (schooltime: $t(215) = 6.26$, $p < .01$; leisure time: $t(215) = 6.18$, $p < .01$; physical education: $t(188) = 3.07$, $p < .01$). Children spent 25.6 min of an average physical education class of 77 min in MVPA, which is 19.71 % and thus much less than the 50 % recommended by the

U.S. Department for Health and Human Sciences. Only 0.5% of the participants (1.2% of the boys and 0% of the girls) achieved this value.

Discussion: Overall, 25.6 % of the children and adolescents in Luxembourg met WHO's PA guideline of at least 60 min MVPA per day, which is in line with results from other European countries. According to our data, the achieved MVPA is mainly due to leisure time activities, whereas the potential of school and physical education in providing and promoting PA has apparently not been fully exploited yet. The consistency of these findings will be examined in a second survey in 2019.

References:

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