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### **Are the adolescents who sleep the least more or less active compared to their peers? A Cross-sectional study among 15-year olds**

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**Background and Aim:** Sleep duration has declined markedly during the last century. Short sleep in adolescents has been associated with obesity, increased insulin resistance, and cardiovascular risk. It has been proposed that a decline in habitual physical activity (PA) due to fatigue induced by the lack of sleep could be contributing to the detrimental effects of inadequate sleep. Therefore, the aim of this study is to test whether short sleep duration is linked to low amount of PA.

**Methods:** This investigation is a part of the CRO-PALS study which is an on-going longitudinal study conducted in a representative sample of urban youth in Zagreb (Croatia). CRO-PALS involves 903 adolescents and for the purpose of this study data from 843 participants (mean age [SD]=15.6[0.3] years) with information on PA and sleep were analysed. Duration of moderate and vigorous PA during the last week was collected using the SHAPES questionnaire while sleep duration was calculated from self-reported usual bedtimes and awakenings. After participants were divided into sex-specific quartiles according to sleep duration, differences in PA across quartiles of sleep time was evaluated using one-way ANOVA by sex.

**Results:** More than half of the adolescents reported inadequate sleep time during the school week. Nevertheless, in boys no differences in PA were found across quartiles of sleep time ( $p$  for linear trend = 0.55). In contrast, among girls shorter sleep was actually linked with more PA ( $p$  for linear trend = 0.005). Specifically, girls who slept less than 7.5h on an average school night reported getting 24-33 min more PA compared to their peers who slept longer ( $p=0.006$ ).

**Conclusion:** Although the majority of adolescents reported inadequate amounts of sleep, this was not accompanied with lower levels of PA in this group. Moreover, girls who slept the least were the most active ones.