

Moderate-to-Vigorous Physical Activity and Its Association With Psychological Distress and Sleep Quality Among Lithuanian School-Aged Adolescents: A Cross-Sectional Study

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Purpose: To determine how typical daily time spent in moderate-to-vigorous physical activity (MVPA) relates to psychological distress and sleep quality in Lithuanian school-aged adolescents (11–18 years).

Background: Roughly 81% of adolescents worldwide fall short of the World Health Organization (WHO) guideline of ≥ 60 min MVPA per day. A recent umbrella meta-analysis reports medium protective effects of physical activity on adolescent mental health. Emerging evidence also links MVPA to better sleep, which subsequently predicts lower anxiety and depressive symptoms. Large Baltic studies that integrate validated mental health and sleep metrics are lacking. This study addresses that gap.

Methods: The cross-sectional epidemiological study included 4,925 school-aged pupils from 11 to 18 years (mean 14.08 ± 2.21). There were 49.1% boys and 50.1% girls. Physical activity was evaluated by asking how long per day adolescents are usually active at moderate-to-vigorous intensity (1 = almost not active; 4 = ≥ 1 h). Psychological distress was measured with the six-item Kessler scale (Cronbach $\alpha = .897$). Sleep quality was rated on a 5-point Likert scale (1 = very bad; 5 = very good). Age and gender were covariates.

Results: Fifteen-point-four percent of participants accumulated ≥ 60 min of MVPA per day, more boys (19%) than girls (11%). In a linear regression analysis, higher physical activity significantly predicted lower psychological distress (std $\beta = .089$; $\Delta R^2 = .007$) and sleep quality ($\beta = .094$; $\Delta R^2 = .008$), and lower psychological distress predicted better sleep quality ($\beta = .401$; $\Delta R^2 = .142$) controlling for age and gender. Psychological distress mediated the physical activity – sleep quality relationship (CSIE = .053 [.0419–.0644]).

Conclusion: Engaging in at least one hour of MVPA per day is directly associated with reduced psychological distress and better sleep among Lithuanian school-aged adolescents. Moreover, MVPA is indirectly associated with sleep quality by reducing psychological distress. Although causality cannot be inferred from this cross-sectional design, embedding daily MVPA sessions into the school timetable represents a low-cost, scalable strategy to improve student wellbeing; longitudinal and intervention studies are needed to confirm these relationships.

