

Relationships between physical activity and sleep in children and adolescents are less consistent than in adults.

A systematic review of the relationships between physical activity and sleep in youth

St. Laurent, C. W., Rodheim, K., and Spencer, R. M. C.

BACKGROUND

In adults, higher levels of physical activity are associated with better sleep outcomes, and more or better quality of sleep is associated with higher levels of physical activity. However, there is not yet a consensus of the influence of sleep on physical activity outcomes or physical activity on sleep outcomes in childhood.

PURPOSE

The aim of this systematic review was to examine the relationships between physical activity and sleep in children and adolescents.

METHODS

A systematic literature search was conducted with a predefined list of keywords in PubMed, PsycINFO, and Web of Science for articles published between January 1, 1980 and July 15, 2019. Articles were included if participants were under 18 years, published in English, and used an observational (cross-sectional, cohort, and case-control) or experimental (acute bout or intervention) study design. Articles were excluded if participants were mostly or only adults, primarily a clinical population (e.g., diagnosed sleep or cardiometabolic disorders), or the study design was a case study or case series report. The GRADE framework was used to assess study quality.

RESULTS

A total of 144 studies (conducted in 36 countries), from 127 articles met the inclusion criteria. Seventy-eight studies examined physical activity or fitness exposures with sleep outcomes ($n = 55$ cross-sectional, 5 longitudinal, 2 acute bout experimental, and 16 chronic experimental). Fifty-four studies examined sleep exposures with physical activity outcomes ($n = 38$ cross-sectional, 2 longitudinal, 3 acute bout experimental, and 11 intervention experimental). Twelve studies examined sleep exposures with fitness outcomes ($n = 7$ cross-sectional, 1 longitudinal, 1 acute bout experimental, and 3 intervention experimental). Most studies included preadolescents ($n = 68$) and adolescents ($n = 71$), while fewer included infants ($n = 4$), toddlers ($n = 7$), and preschoolers ($n = 21$). Across study designs and outcomes, overall effects varied, and quality of evidence ranged from very low to high.

CONCLUSIONS

Although there is some evidence of interactive relationships between sleep and physical activity in youth, the high prevalence of mixed and null results could be related to study limitations. Additional higher quality studies and more studies in early childhood are needed.

