

Later school start times improve sleep in high school students

Research conducted over the past four decades has shown that acquiring adequate sleep is a component of normal growth and development during childhood and adolescence. Adequate sleep is needed to achieve optimal mental and physical alertness, daytime functioning, and learning capacity in youth, which are of particular importance in the school setting.

The National Sleep Foundation released recommendations in February 2015 that school-aged children (6 to 13 years) and adolescents (14 to 17 years) get at least 9 to 11 hours and 8 to 10 hours of sleep per night, respectively. Yet, by some estimates, only one in ten adolescents meet these recommendations on weeknights. This may be due to early school start times that conflict with the normal developmental shift that favors late morning-late day activities and later bedtimes in high school students. Other factors may be keeping adolescents awake longer, such as completing homework or interacting with friends on social media sites like Facebook.

To address the public health issue of chronic sleep restriction among high school students, schools have made efforts over the past 15 years to change start times to occur later in the morning to better align with adolescents' circadian timing, social and environmental pressures, and to improve academic performance. Further, the American Academy of Pediatrics released a policy statement calling to delay the start of class to 8:30 a.m. or later. Some estimate that over 80 U.S. school districts have already adopted later school start times. Yet, little was known regarding the experimental evidence of such interventions, thus we sought to review the literature to evaluate the impact of delayed school start time on students' sleep, health, and academic outcomes.

To complete the study, we systematically searched electronic databases and we extracted data using standardized guidelines. Six studies were selected that used a experimental designs, including pre-post, no control (n=3), randomized controlled trial (n=2), and quasi-experimental (n=1) designs.

Our findings indicated that school start times were delayed 25 to 60 minutes, and correspondingly, total sleep time increased from 25 to 77 minutes per weeknight. Some studies revealed reduced daytime sleepiness, depression, caffeine use, tardiness to class, and trouble staying awake. The overall evidence supports calls for policy that advocates for delayed school start time to improve sleep, particularly among high school students. This presents a potential long-term solution to chronic sleep restriction during adolescence. However, there is a need for rigorous randomized study designs and reporting of consistent outcomes, including objective sleep measures and consistent measures of health and academic performance.

Despite the benefits of later school start times, school districts may encounter barriers related to modifying transportation schedules and the associated costs, for families where older siblings

provide childcare for younger sibling, and delay of sports, social activities, part-time employment, and other afterschool extracurricular activities. With regard to the latter concern, our study found no difference following the delayed start time intervention among those studies that examined participation in afterschool activities. Another concern is that students may stay awake later in order to complete homework or socialize, however two of the reviewed studies found that significantly fewer students reported being too tired to complete schoolwork from pre- to post-intervention, and no studies found students went to bed at a later time following the intervention. Nevertheless, instituting a delay in school start times is achievable with sufficient strategizing and preparation, as demonstrated by several school districts, and internet-based resources exist that address these barriers and provide guidance for school districts considering implementing a later school start time policy.

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Publication

[Delayed school start times and adolescent sleep: A systematic review of the experimental evidence.](#)

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