

Impact of shift work on sleep, alertness and cognitive function– can “splitting” sleep reduce the adverse effects of night shift work?

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There are currently 1.5 million shift workers in Australia, representing 16% of the workforce (Rajaratnam *et al.*, 2013). Shift work is associated with greater levels of obesity, cardiovascular disease, type 2 diabetes and depression, and an increased risk of errors and accidents (Barger *et al.*, 2009). A major factor contributing to these adverse health and safety effects is circadian misalignment and insufficient sleep. Night shift workers typically only obtain around 5 hours of daytime sleep before their sleep is truncated by the combination of declining homeostatic drive for sleep and increasing circadian drive for wakefulness in the early afternoon (Goel *et al.*, 2011). The term “split sleep” means two or more sleep opportunities in a 24-h period, ranging from a main sleep and a supplemental nap (*e.g.* 6 and 2 h), through to a main sleep and several naps, to multiple naps with no clear main sleep. Split sleep schedules are common practice in a number of industries including healthcare, maritime and transport. There is evidence that split sleep may restore alertness and performance as effectively as consolidated sleep (Jackson *et al.*, 2014), and that the critical factor in sustaining performance is total sleep time in 24h. In a laboratory study comparing simulated day, night and split sleep conditions, Jackson *et al.*, (2014) found that participants on the night and split sleep schedules obtained significantly more total sleep time and less sleepiness during work hours than the day sleep condition. There is currently limited evidence of the benefits of split sleep on health outcomes. The current data suggests that a split sleep schedule may be a useful alternative to a consolidated daytime sleep schedule in industries that allow for this flexibility (Short *et al.*, 2015). Evidence of the effectiveness of a split sleep schedule will have particular relevance for occupational environments in determining the adequate duration and effective placement of the sleep opportunities to ensure optimal productivity, health and safety outcomes for shift workers.

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