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## **Sleep Restriction and Altered Sleep Timing on Energy Expenditure**

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Sleep restriction studies have shown insulin insensitivity, obesity, and weight gain are a few physiological changes associated with sleep restriction, but few studies have examined the effect on physical activity. No studies have examined if the timing of the sleep restricting impacts physical activity levels. Thus, the purpose of this study was to examine the effect of 4 days of shortened sleep on changes in physical activity when the sleep loss is due to delaying sleep or awaking early. Two men and two women (age: 27.5 yr) participated in three randomized conditions sessions. The subjects wore an Actigraph and Actiwatch for five days. The conditions were: normal sleep (7-9 hours), delayed sleep (delayed bedtime by 2hr late, same wake time) or early awake (waking 2 h early, same bedtime). Result: Total number of steps taken while awake was not different by condition ( $P>0.05$ ), but there was a trend ( $P<0.059$ ) to be a difference in step taken across days, with the lowest number of step taken on the 4th day of sleep restriction. Examining just the 2 hr of awake time under the delayed vs early condition, resulted in on differences in the number of steps taken. In conclusion, staying awake 2 h longer did not alter the total step count and there was no difference in the number of steps taken in the 2hr of being awake in either delayed sleep or early waking.