# Article information:

Energy expenditure during sleep, sleep deprivation and sleep following sleep deprivation in adult humans - Jung - 2011 - The Journal of Physiology - Wiley Online Library  
<https://physoc.onlinelibrary.wiley.com/doi/full/10.1113/jphysiol.2010.197517>

# Article summary:

1. The primary aim of the study was to quantify the energy conserved during sleep and the metabolic cost of missing one night of sleep in humans.

2. The study found that EE is lower during sleep compared to pre-sleep wakefulness, and total daily energy conserved by sleep has yet to be quantified in humans.

3. The study also examined the effects of sleep stage on EE during baseline and recovery sleep, finding that EE varies between sleep stages and is lowest during SWS on the recovery night.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Energy expenditure during sleep, sleep deprivation and sleep following sleep deprivation in adult humans" aims to quantify the energy conserved during sleep and the metabolic cost of missing one night of sleep in humans. The study involved seven healthy subjects who were instructed to refrain from consuming caffeine and alcohol for three days prior to the laboratory protocol. The study found that EE is lower during sleep compared to pre-sleep wakefulness, and total daily EE is significantly increased following total sleep deprivation. Recovery sleep also significantly decreased EE compared to a habitual night of sleep.

One potential bias in this study is the small sample size of only seven subjects, which may limit the generalizability of the findings. Additionally, all subjects were physically inactive, which may not accurately reflect the energy expenditure of individuals with an active lifestyle. The exclusion criteria also limit the generalizability of the findings as individuals with chronic medical or psychiatric conditions were excluded.

The article does not provide evidence for its claim that sleeping metabolic rate is lower than resting metabolic rate during wakefulness with estimated reductions in EE of 7 to 69% among different mammalian species. Furthermore, while significant differences in EE have been reported between sleep stages in some studies, not all studies have found these differences. This suggests that more research is needed to fully understand the effects of different sleep stages on EE.

The article does not explore counterarguments or potential confounding factors that may affect EE during sleep and recovery following sleep deprivation. For example, stress levels and hormonal changes may affect energy expenditure during these periods.

Overall, while this study provides valuable insights into energy expenditure during different stages of sleep and following total sleep deprivation, it has limitations such as a small sample size and limited generalizability due to exclusion criteria. Further research is needed to fully understand the effects of different factors on energy expenditure during these periods.

# Topics for further research:

* Sleep stages and energy expenditure
* Effects of physical activity on energy expenditure during sleep
* Sleep deprivation and stress hormones
* Resting metabolic rate vs sleeping metabolic rate
* Factors affecting energy expenditure during sleep
* Sleep and hormonal changes in energy expenditure

# Report location:

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