

# SLEEP AND LEARNING



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## DID YOU KNOW:

Many studies show students who consistently get a better night's sleep learn and retain more than those who do not?

## So much is happening when we sleep!

- When we learn something new, we need to give our brain sleep to strengthen and stabilize the memories associated with that material.
- Study, then rest to allow your brain to consolidate and make connections.
- Information is moved from short term memory to long term memory during sleep. Also, irrelevant information is erased!

## Melatonin

- Naturally occurring hormone controlled by exposure to light that helps regulate sleep/wake cycle
- Modern day life can disrupt natural production. To fight this, try to increase your exposure to light during the day to decrease production of melatonin. At night, decrease exposure to light to increase production of melatonin.

## Ideas to improve sleep habits:

- Have a bedtime routine-something that lets your body know its time for bed.
- Avoid things that might be too stimulating- caffeine, [blue light](#), exercise...
- Make your bedroom a comfortable sleep environment.
- Don't confuse your body by studying or watching TV in bed. Bed should be for sleep!

## Timing is important

- Shoot for 6-8hrs. of sleep per night.
- Try to go to sleep and wake up at the same time every day.
- All-nighters are not an effective way to build long term memory and promote deep learning.
- Research shows that sleep is extremely important in learning complex skills (like those required to practice medicine). It's in your best interest to develop good sleep habits now!

## Interested in more tips?

Make an appointment with the Office of Academic Success:  
[SomAcademicSuccess@Hofstra.edu](mailto:SomAcademicSuccess@Hofstra.edu)

# RESEARCH ON THE EFFECTS OF SLEEP AND LEARNING

Beebe DW, Rose D, Amin R. [Attention, learning, and arousal of experimentally sleep-restricted adolescents in a simulated classroom.](#) J Adolesc Health. 2010 Nov;47(5):523-5.

Born J, Wilhelm I. [System consolidation of memory during sleep.](#) Psychol Res. 2012 Mar;76(2):192-203.

Clemens Z, Mölle M, Eross L, Jakus R, Rásonyi G, Halász P, Born J. [Fine-tuned coupling between human parahippocampal ripples and sleep spindles.](#) Eur J Neurosci. 2011 Feb;33(3):511-20.

Durrant SJ, Taylor C, Cairney S, Lewis PA. [Sleep-dependent consolidation of statistical learning.](#) Neuropsychologia. 2011 Apr;49(5):1322-1331.

Lo JC, Ong JL, Leong RL, Gooley JJ, Chee MW. [Cognitive performance, sleepiness, and mood in partially sleep deprived adolescents: the need for sleep study.](#) Sleep. 2016 Mar 1;39(3):687-98.

Rauchs G, Feyers D, Landeau B, Bastin C, Luxen A, Maquet P, Collette F. [Sleep contributes to the strengthening of some memories over others, depending on hippocampal activity at learning.](#) J Neurosci. 2011 Feb 16;31(7):2563-8.

Tononi G, Cirelli C. [Sleep and the price of plasticity: from synaptic and cellular homeostasis to memory consolidation and integration.](#) Neuron. 2014 Jan 8;81(1):12-34.

Wamsley EJ, Perry K, Djonlagic I, Reaven LB, Stickgold R. [Cognitive replay of visuomotor learning at sleep onset: temporal dynamics and relationship to task performance.](#) Sleep. 2010 Jan;33(1):59-68.

Wamsley EJ, Tucker M, Payne JD, Benavides JA, Stickgold R. [Dreaming of a learning task is associated with enhanced sleep-dependent memory consolidation.](#) Curr Biol. 2010 May 11;20(9):850-5.