

How important is sleep?

Billy Crystal on his insomnia, “I sleep like a baby; I wake up every hour.”

Getting 6 hours versus 8 hours of sleep a night will increase the likelihood of catching a cold 4-fold.ⁱ Getting less than 7 hours of sleep a night disrupts the metabolic balance of ghrelin (hunger) and leptin (full) hormones in your stomach which can trigger weight gain and lead to type 2 diabetes.ⁱⁱ Sleeping 5 hours a night vs. 7 hours doubles the risk of a heart attack.ⁱⁱⁱ Sleep is our superpower.

REM sleep, also known as dream sleep or rapid eye movement sleep, is integration sleep. The raw ingredients of the previous day are replayed at half or quarter speed to integrate them, inspire creativity and problem solve.

In 1964 Paul McCartney woke up in his girlfriend Jane Asher’s home with the melody of “Yesterday” playing in his head. He hurried to a piano and played the tune to avoid forgetting it. Thinking he must have plagiarized it, for over a month he asked people in the music business if they had ever heard it before.^{iv} After convincing himself he had not robbed anyone of their melody, he started writing lyrics for it.

Fortunately, Paul decided his original verse, “Scrambled eggs. Oh, you’ve got such lovely legs. Scramble eggs. Oh, my baby, how I love your legs.” wasn’t quite right. It took him over two years to pen the right lyrics and it has since become one of the most popular songs in the history of music with over 4,000 artists recording it.^v

Slow wave (Non rapid eye movement) sleep improves memory retention by consolidating packets of information like a file transfer process from the hippocampus to the cortex, from short term to long term memory.^{vi}

Sleeping 8 hours after learning a list of verbal facts improves memory by up to 40% compared to staying awake.^{vii} The facts are temporarily stored in our limited capacity (short term) storage site, the hippocampus, but are transferred into our larger capacity (long term) hard drive in the neocortex using sleep spindles, a spike of neural collaboration, similar to a high speed courier service.

Another fascinating process occurs during slow wave sleep. The glymphatic system in our brain removes dangerous metabolic contaminants like a night-time power cleanse that clears out toxic amyloid-beta plaque which causes memory impairment. That means getting 7-8 hours of sleep a night is your best chance of avoiding Alzheimer's.

Numerous large-scale studies have shown that you can reduce your risk of cancer by getting 7-8 hours of sleep a night.^{viii} During slow wave sleep the immune system is enhanced by improving the efficiency of killer T cells to attach to a specific target, such as a cell infected with a virus or cancer, and kill the invading pathogen.^{ix}

Sleep disruption is a well-documented side effect of anxiety disorder and depression but research shows you can reduce anxiety and depression by improving sleep.^x It's a two-way street.

**“The best bridge between despair and hope is a good night's sleep.”
E. Joseph Cossman**

I had a big breakthrough the other day. I realized I start things but don't always finish them. So last night for dinner I finished off a whole chocolate cake!

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ⁱ A Prather, et al. Behaviorally assessed sleep and susceptibility to the common cold. (2015) Sleep: Volume 30, Issue 9, September, pages 1353-1359

ⁱⁱ K. L. Knutson, et al. The metabolic consequences of sleep deprivation. (2007) Sleep Med. Review. June;11(3)

ⁱⁱⁱ M. Bengtsson, "Sleeping 5 hours or less a night associated with doubled risk of cardiovascular disease" (2018) European Society of cardiology convention, Presented Aug. 26th

^{iv} Cross, Craig, (2005) "The Beatles: Day-by-Day, Song-by-Song, Record-by-Record. Lincoln NE: iUniverse, Inc. pgs. 464-465

^v Guinness World Records, (2009)

^{vi} B. Rasch and Jan Born, "About Sleep's role in Memory." Physiological Review. (2013) April;93(2) pgs. 681-766

^{vii} M. Walker, et al. Sleep dependent memory processing. (2008) Harvard Review of Psychiatry. 16 (5) pages 287-298

^{viii} HR Colten and BM Altevogt, (2006) "Sleep disorders and sleep deprivation: An unmet public health problem," Chapter 3, Institute of Medicine (US) Committee on Sleep Medicine and Research. National Academies Press.

^{ix} S. Dimitrov et al. "Gas-coupled receptor signaling and sleep regulate integrin activation of human antigen-specific T cells." (2019) the Journal of Experimental Medicine. [jem.201811169](https://doi.org/10.1083/jem.201811169) DOI

^xM. Walker et al., "The human emotional brain without sleep — a prefrontal amygdala disconnect." (2007) Current Biology, Vol. 17, Issue 20, October 23, pgs. 877–878