HOW LONG SHOULD YOUR NAPS BE? Transcript

Your eyes get heavy and gradually... close... But wait! It is only lunchtime and you still have so much to do. Would taking a nap help? Or would it derail your day?

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Our sleep, both at night and in naps, is made up of approximately 90-minute sleep cycles with four stages each. A nap can last anywhere from five minutes to three hours, so it can include full sleep cycles or just a few stages.

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As you fall asleep, you enter Stage 1: the first two to five minutes of sleep. Stage 2 comes next, for about 30 minutes. In Stage 2, body temperature drops, muscles relax, and breathing and heart rate become more regular. Your neurons start to fire in unison, creating waves of activity that sweep across the cortex, punctuated by rapid bursts of neural activity called sleep spindles. As you enter Stage 3, or slow wave sleep, the rolling waves increase as your neurons fire in coordination. This phase lasts about 20 to 30 minutes and is where your deepest sleep occurs. Then, you enter REM sleep, which lasts about 10 to 20 minutes in a nap. In REM, the brain becomes more active, more like your brain activity while awake. The end of REM signals the completion of a sleep cycle.

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OK, but will a nap make you feel better? Well, that depends on a few things— especially what stages of sleep the nap includes.

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Take a 30 minute nap, which consists mainly of Stage 2 sleep. Stage 2 sleep is associated with long-term potentiation, a process that's thought to strengthen the synapses between neurons, which is essential for learning. A 20 to 30 minute nap stops short of Stage 3′s deep sleep, making it relatively easy to wake up from.

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A 30 to 60 minute nap, meanwhile, has the benefits of Stage 2 sleep and also takes you into the deeper sleep of Stage 3. During Stage 3, multiple brain areas work together to transfer information from short-term memory storage to long-term storage, stabilizing and strengthening long-term memory by coupling sleep spindles with slow waves. Stage 3 is the most difficult stage to wake up from. So while a 30 to 60 minute nap can have cognitive benefits, those benefits often don’t kick in until about 15 minutes after waking up.

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60 to 90 minute naps enter the REM stage. While in REM, the prefrontal cortex, which is largely responsible for inhibition and cognitive control, becomes much less active. Meanwhile, the amygdala and cingulate cortex, regions associated with emotion and motivation, are highly active. Researchers have posited that the combination of these things leads to bizarre dreams during REM sleep: the decrease in inhibition

and cognitive control might lead to wild associations— and, thanks to the amygdala and cingulate cortex activity, those associations can be between emotionally charged topics. Some researchers think this stage might help us make innovative connections between ideas upon waking. Because the brain activity during REM is closer to waking, it may be easier to wake up from REM than Stage 3, even though the nap is longer.

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The time of day also matters. Our need for deep Stage 3 sleep progressively increases throughout the day. So if you nap later, you may rob yourself of the sleep pressure needed to go to sleep at night. This doesn't happen for REM sleep. Longer periods of REM occur during morning hours, so morning naps are dominated by REM, midday naps have about equal parts of REM and deep sleep, and evening naps contain more deep sleep.

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On top of all this, it seems that we're just about evenly split between nappers and non-nappers. Nappers consistently show cognitive benefits from napping, but non-nappers may not. Researchers think this could be because nappers are able to stay in a lighter sleep and move through sleep stages more easily. Meanwhile, non-nappers may experience more deep sleep while napping, making them groggy afterward. So will a nap help? Well, there's only one way to find out...