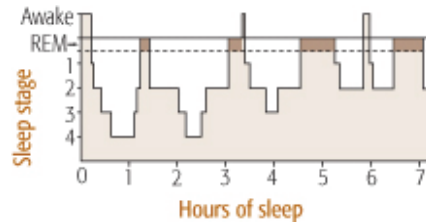


# The Picture of Sleep



When experts chart sleep stages on a hypnogram, the different levels resemble a drawing of a city skyline. This pattern is known as sleep architecture. The hypnogram above shows a typical night's sleep, alternating REM (rapid eye movement) and NREM (non-rapid eye movement) sleep in a cycle that repeats about every 90 minutes.

To wake up feeling refreshed and alert you need both an adequate amount (7-9 hours) and high quality (uninterrupted) sleep. Below is some information about sleep stages and functions of sleep. NREM sleep plays a major role in maintaining our health, while REM sleep is responsible for memory storage and retention, memory organization, and new learning.

## **Stage 1 (occurs several minutes after closing your eyes; lasts 10 seconds to 10 minutes)**

- \* Between being awake and falling asleep
- \* Light sleep

## **Stage 2 (lasts 10-20 minutes)**

- \* Onset of sleep
- \* Becoming disengaged from surroundings
- \* Breathing and heart rate are regular
- \* Body temperature drops (so sleeping in a cool room is helpful)

## **Stages 3 and 4 (it has been 20-30 minutes since you closed your eyes; lasts 30-40 minutes)**

- \* Deepest and most restorative sleep
- \* Blood pressure drops
- \* Breathing becomes slower
- \* Muscles are relaxed
- \* Blood supply to muscles increases
- \* Tissue growth and repair occurs
- \* Energy is restored
- \* Hormones are released, such as: Growth hormone, essential for growth and development, including muscle development

At this point you cycle back through stages 3 and 2 and then enter REM sleep (you have been asleep about 90-100 minutes). The first REM phase lasts about 9 minutes and then you cycle back through stages 2, 3, 4, and REM. You will make about 4 cycles each night.

## **REM**

- \* Provides energy to brain and body
- \* Supports daytime performance
- \* Brain is active and dreams occur
- \* Eyes dart back and forth
- \* Body becomes immobile and relaxed

If sleep is cut short, the body doesn't have time to complete all of the phases needed for muscle repair, memory consolidation and release of hormones regulating growth and appetite. The result is we are less prepared to concentrate, make decisions, or engage fully in school.



Remember, The one-third of your life that you spend sleeping plays a direct role in how full, energetic and successful the other two-thirds of your life can be.

Information adapted from Dr. James Maas' book "Power Sleep", Dr. Dement's book "The Promise of Sleep", National Sleep Foundation website, and Cornell University's Gannett Health Services website.