

SHHHHH!

Consciousness & Sleep

WHY DO WE SLEEP?

Scientists *do NOT know for sure why sleep occurs* & why we need it

Mechanism: Causes - fall asleep in brain (*2really*)
Believe it has evolutionary purpose

Body does not do as much recuperation during sleep as we might believe & brain is active during sleep, so we are *not really decreasing activity*.

1 Theory: Sleep helps us to process & consolidate new memories

Our memory system is a psychological wonder, & several studies have suggested that sleep provides some behind-the-scenes maintenance.

It is likely that as well as fine-tuning our brains, our bodies use this opportunity to carry out a list of housekeeping tasks (*ex: repairing damaged cells*)

Not only do we have to sleep, but it is good for your mind & body as well



if only everyday were like dis



oh wait.

dey iz

Sleep Deprivation: results in memory failures

Rat deprived of restful REM sleep by an animal researcher using a single platform ("flower pot")

At onset of REM sleep, exhausted rat will either fall into deep water only to clamber back to its pot to avoid death from drowning, or...

Nose will become submerged into the water startling him/her back to an awakened state.



Fatal familial insomnia: Rare genetic disease

Fatal familial insomnia: Eventually resulting in a complete inability to sleep.

Many patients go 6-9 months without sleep, during which time they develop dementia & become unresponsive -- Death is the result

[YouTube: Fatal Familial Insomnia](#)



Sleep Cycles

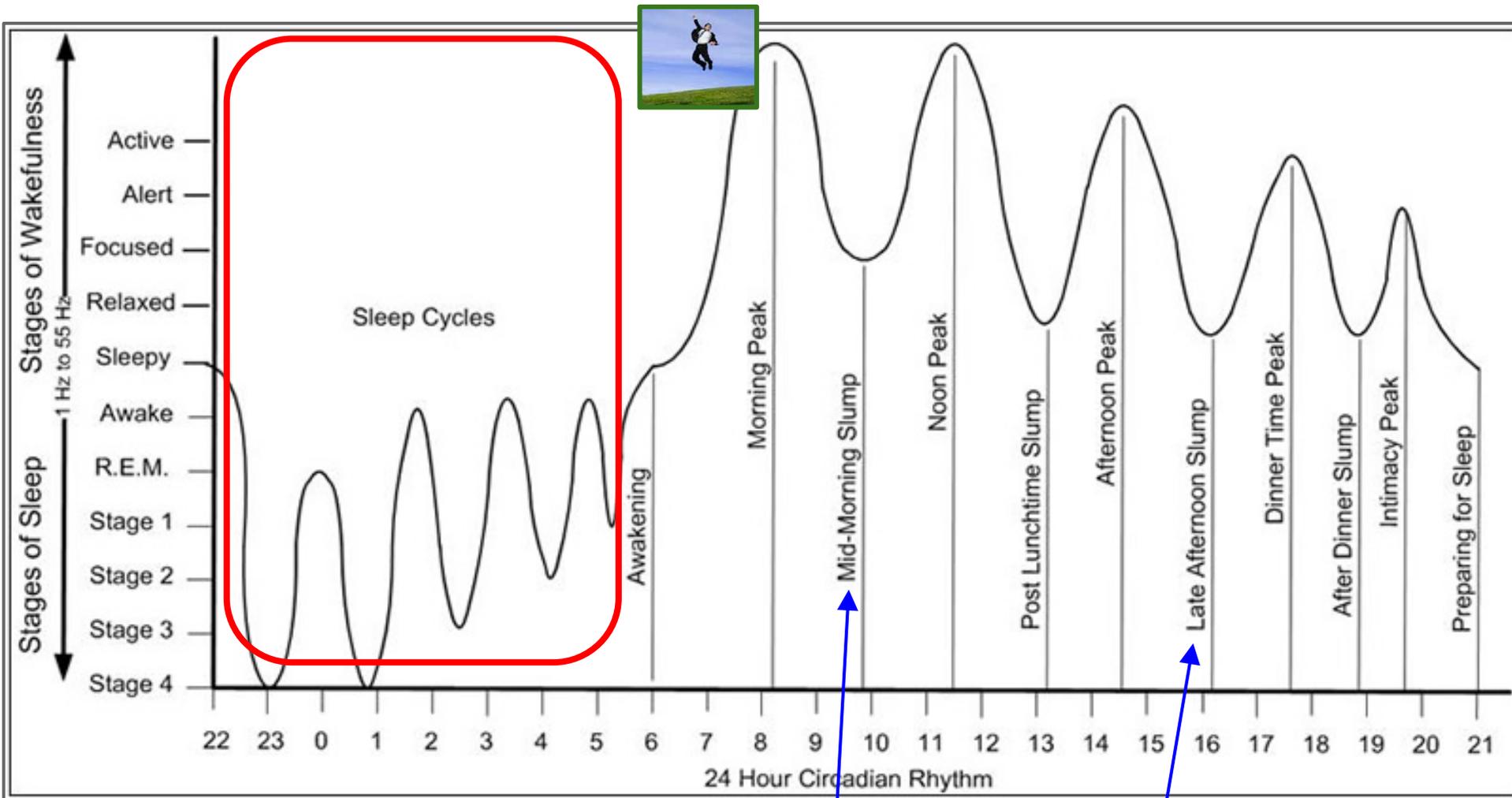
Sleep is just a state of consciousness; To a psychologist, a sleeping person is **NOT** **unconscious**

While we are **asleep** we are just **less aware** of ourselves & the world around us, than normally.

Most studies show that a large number of **Americans**, in general, & **students**, in particular, are **sleep deprived**.

Researchers use **EEG** machines to record **brain waves** to see how active our brains are during sleep.

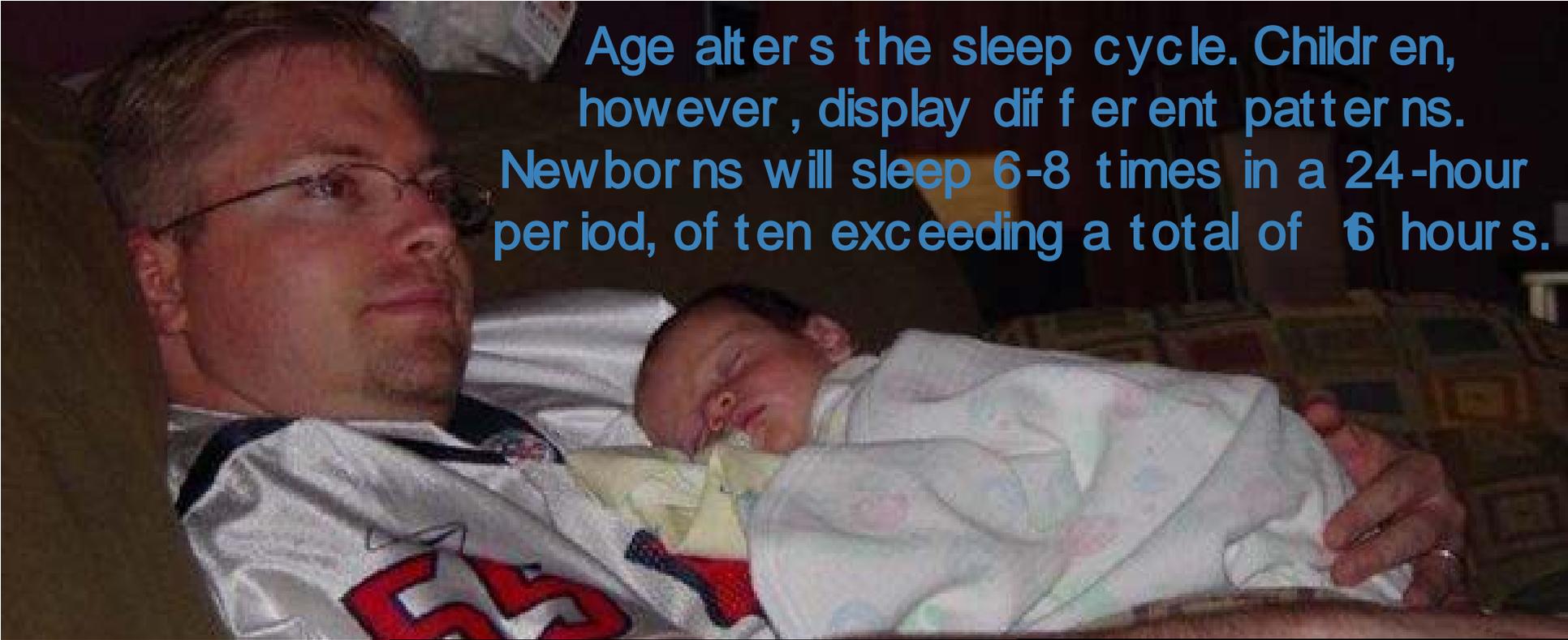




Night Time

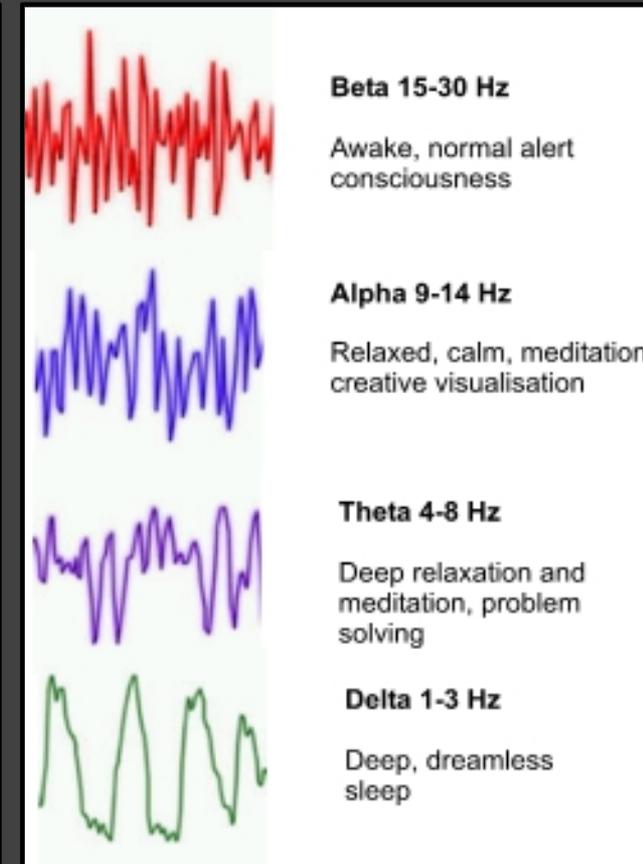
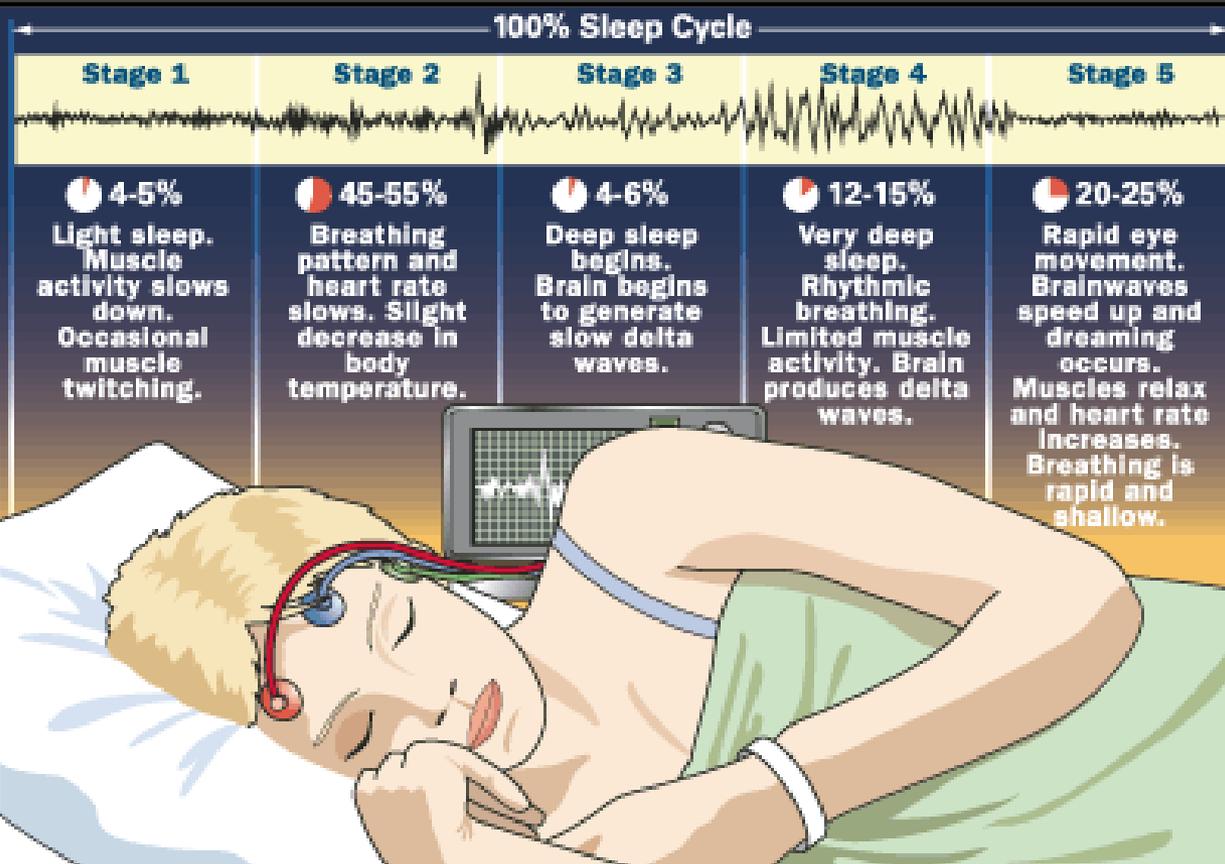


Age alters the sleep cycle. Children, however, display different patterns. Newborns will sleep 6-8 times in a 24-hour period, often exceeding a total of 16 hours.



Sleep Stages Info.

- ★ 5 identified stages of sleep.
- ★ 90-100 minutes to pass through the 5 stages.
- ★ Brain's waves will change according to the sleep stage you are in.
- ★ First 4 stages and known as NREM sleep.
- ★ 5th stage is called REM sleep. 90 minutes (night progresses we have more time in REM cycle).
- ★ 4 to 6 cycles per night is typical.



- ★ **Falling to sleep** - Transition Stage
- ★ Lasts between **1-5 minutes** & Occupies approximately **2-5 %** of night
- ★ **Eyes begin to roll slightly.**
- ★ Consists mostly of *theta* waves that are **high amplitude & low frequency**
- ★ Brief periods of *alpha* waves, similar to those present while *awake*

Stage 1

Hallucinations can occur & feeling of falling.



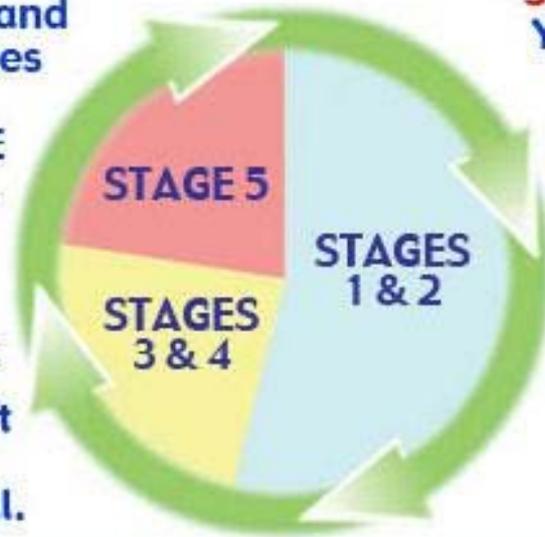
Theta 4-8 Hz
 Deep relaxation and meditation, problem solving



Alpha 9-14 Hz
 Relaxed, calm, meditation, creative visualisation

STAGE 5
 Your brain is active and you dream. Your eyes move under your eyelids in **RAPID EYE MOVEMENT (R.E.M).**

STAGES 3 & 4
 You are in a deep, restful sleep. Your breathing and heart rate slow down, and your body is still.



STAGES 1 & 2
 You first fall asleep, but are not yet in a deep sleep.

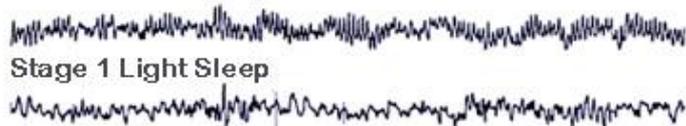


- ★ Follows Stage 1 sleep and is the "baseline" of sleep.
- ★ Part of the 90 minute cycle & occupies approximately 45-60% of sleep.
- ★ Brain waves slow down dramatically.
- ★ Deeper stage of sleep.
- ★ Sleep spindles (bursts of neural activity or neural firings) occur.
- ★ Not easy to wake up.

Stage 2



Relaxed / Waking



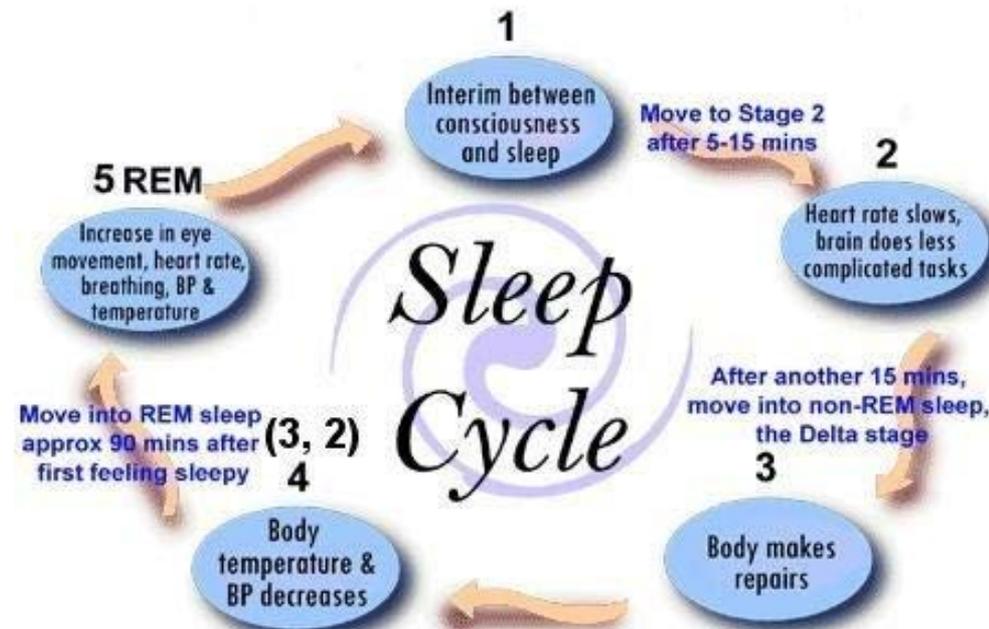
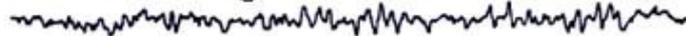
Stage 2 Light Sleep



Deep Sleep



REM / Dreaming



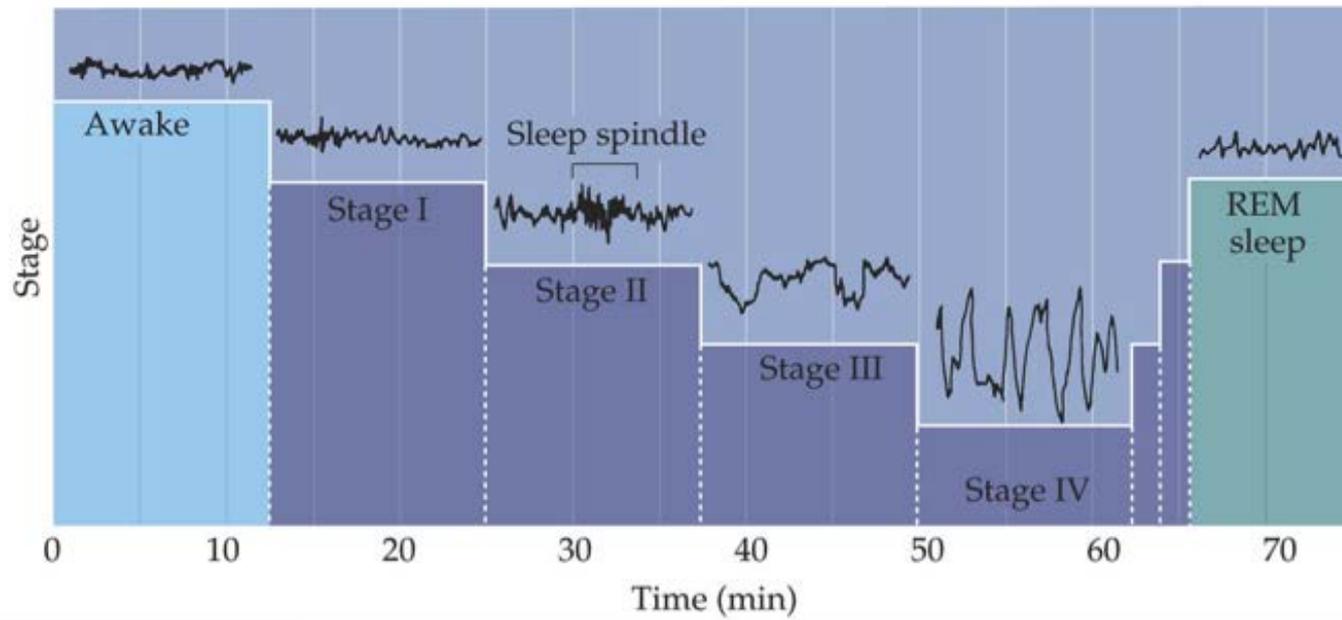
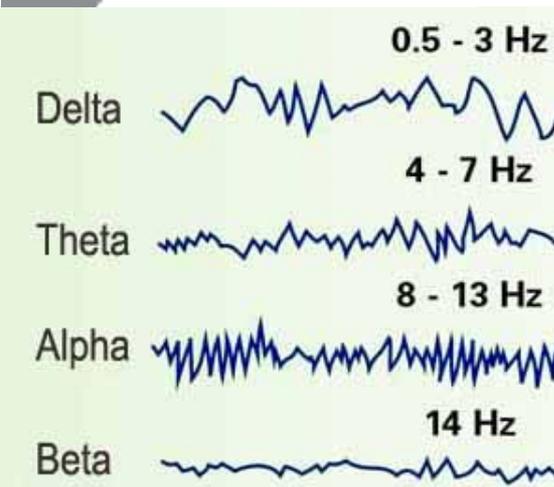
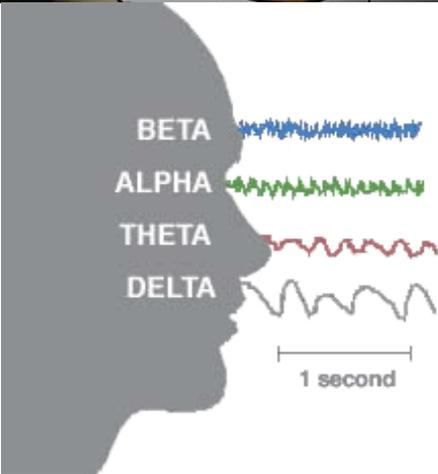
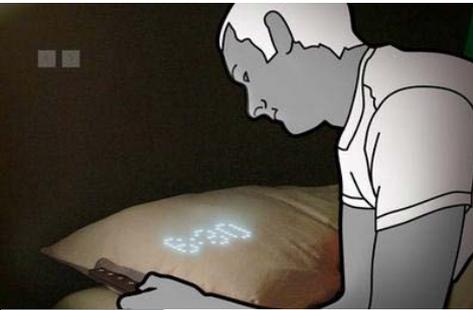
BP = Blood Pressure

Stage 3 & 4

Stages 3 & 4 are "**Delta**" sleep or "**slow wave**" sleep and **may last 15-30 minutes**.

"**slow wave**" sleep because brain activity slows down dramatically.

"**theta**" rhythm of Stage 2 to a much **slower rhythm** called "**delta**" and the **height or amplitude of the waves increases dramatically**.



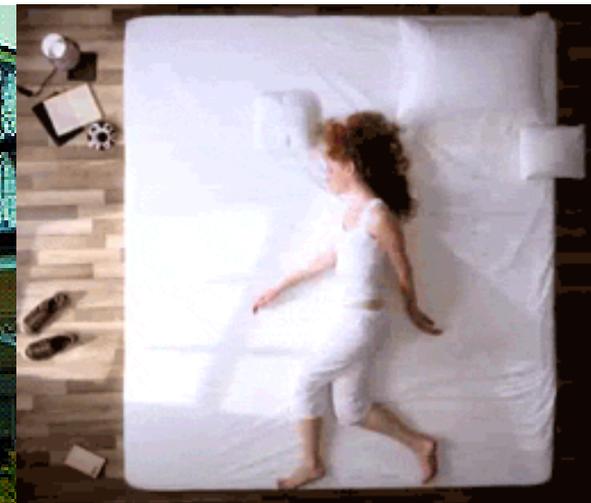
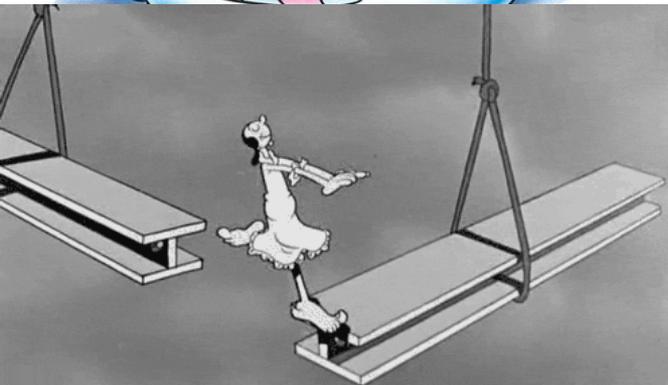


Stage 3 and 4 (*cont.*)

Contrary to popular belief, it is **delta** sleep that is the "**deepest**" stage of sleep (*REM is not*) and the **most restorative**.

It is **delta sleep** that a **sleep-deprived** person's brain craves the first and foremost.

In **children**, **delta sleep can occupy up to 40% of all sleep time** & this is what makes children difficult to wake or "*dead asleep*" during most of the night.



Stage 5: REM

REM: Rapid Eye Movement

This is a very active stage of sleep.

Composes **20-25 %** of a normal nights sleep.

Breathing, heart rate & brain wave activity quicken.

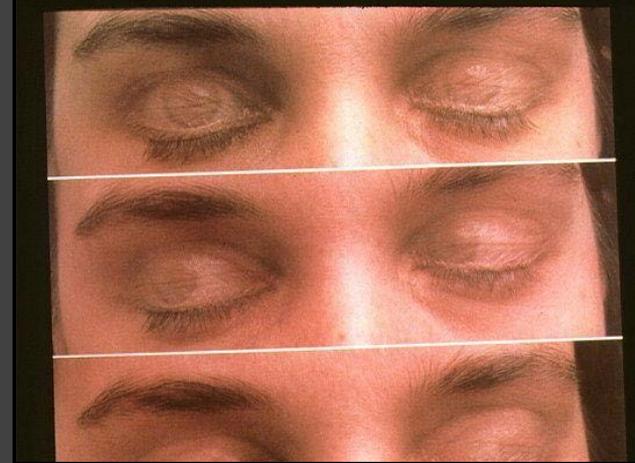
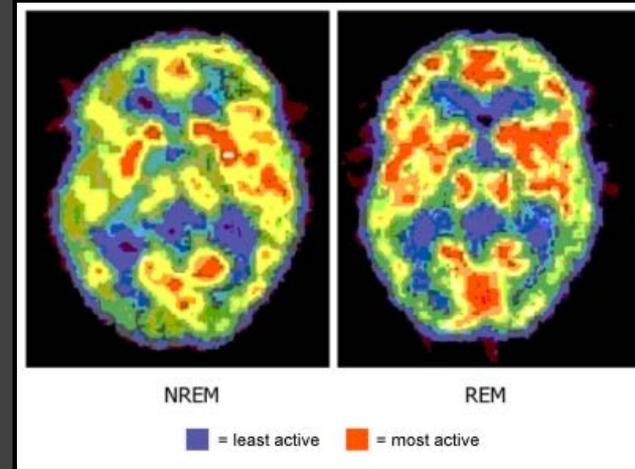
Vivid Dreams can occur.

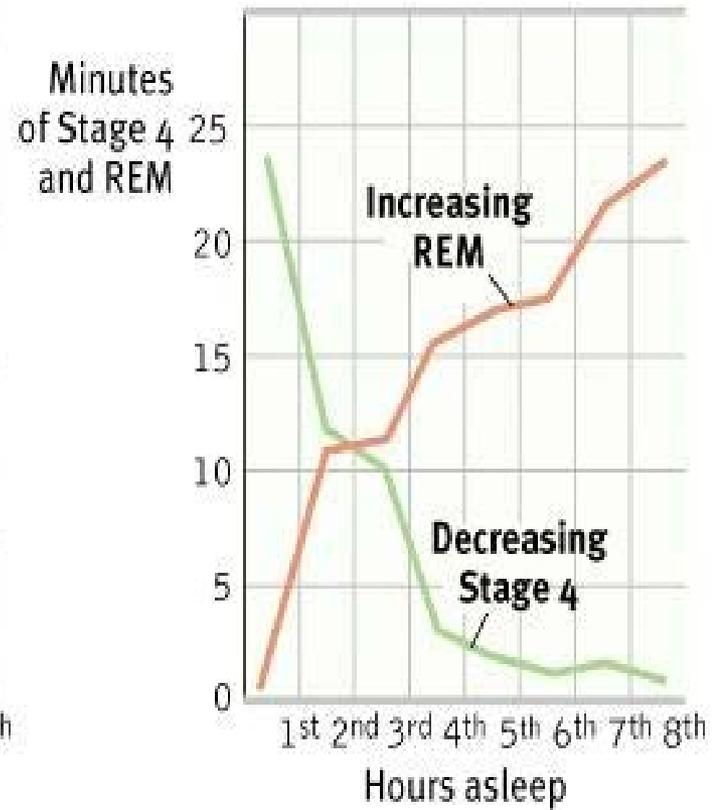
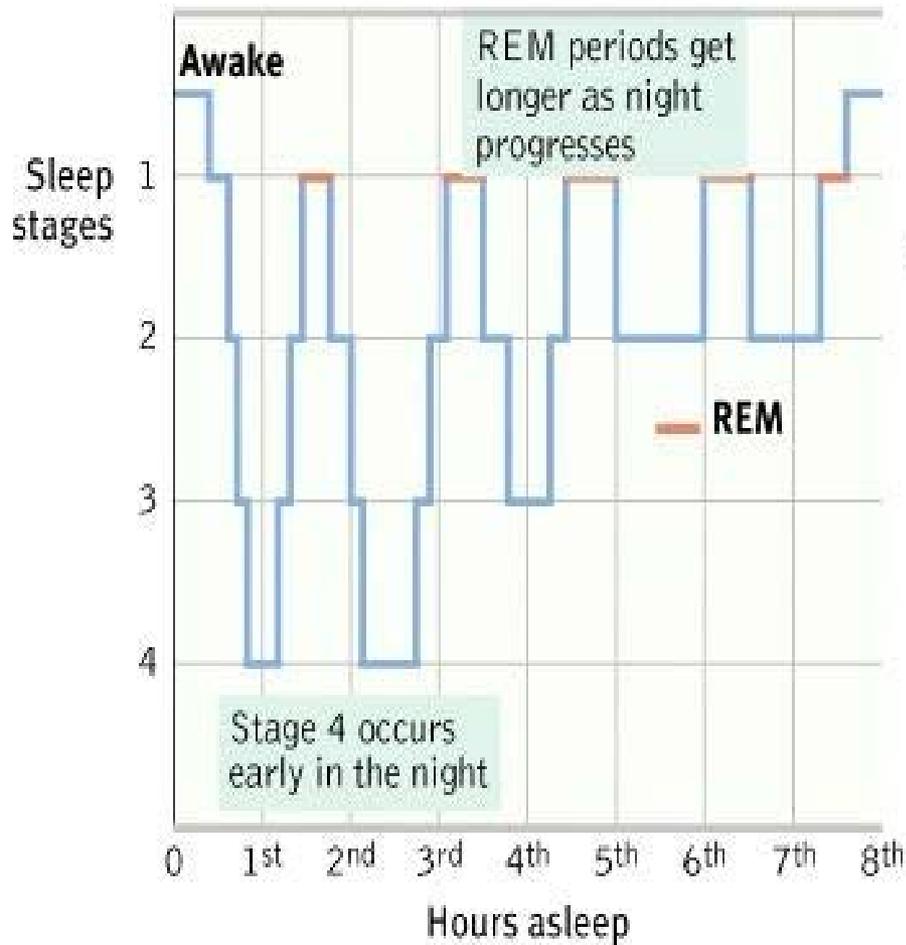
From REM, you go back to Stage 2

Causes a decrease in muscle tone & control. Yet Brain active: PARADOXICAL

Impossible to sleepwalk in this stage (*the body is immobile*).

REM cycles decline during childhood and levels off at 20%



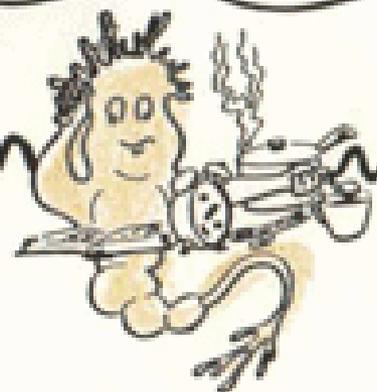


Sleep Deprivation Experiment: The story of Peter Tripp.



BRAIN WAVES

Beta β
13+ cps



Mind and body active and busy
Short-term memory being used

Alpha α
8-12 cps



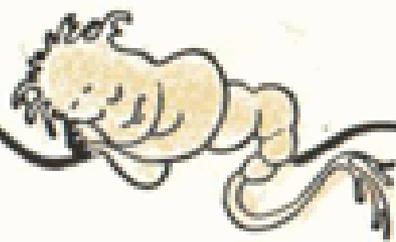
Mind and body calm and relaxed
Long-term memory activated
Learning is easy and rapid

Theta θ
4-7 cps



A state of deep relaxation
High creativity and insight
Sub-conscious mind essential

Delta δ
0.5-5 cps



sleeping
Minimum brain activity

How much sleep do you need?

8 hours ~ typically

We ALL sleep on average approximately 25 years during our entire life span.

Accumulating evidence suggests:

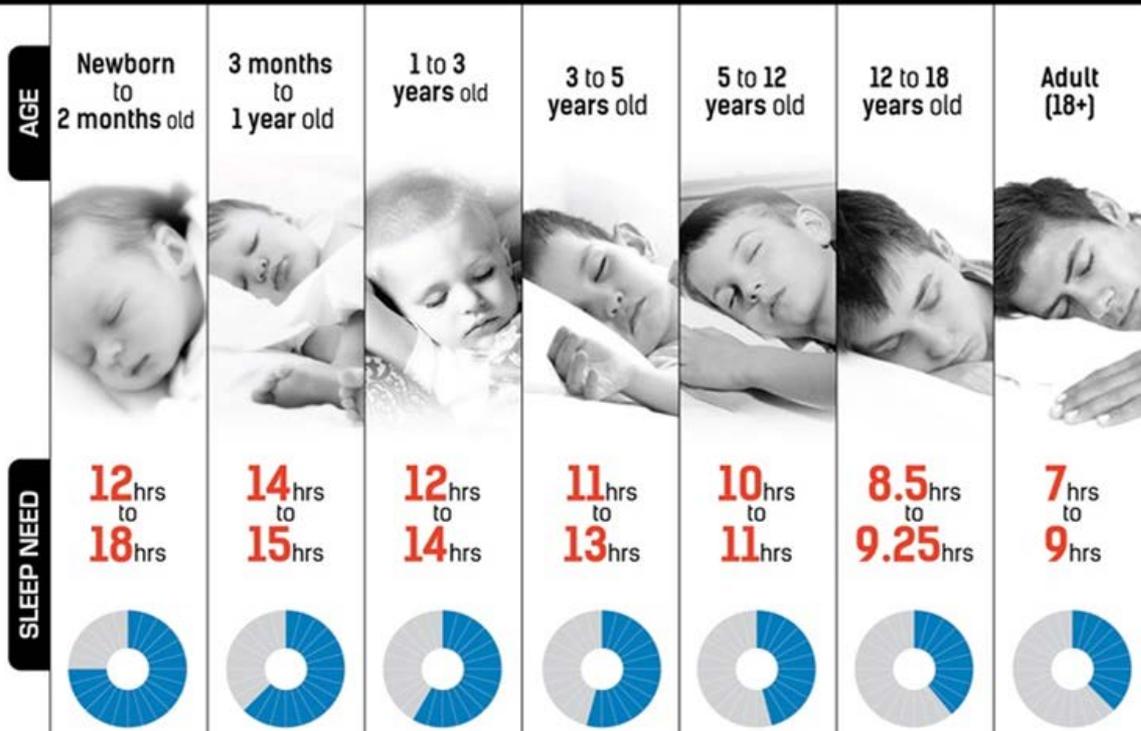
Sleep loss can affect physiological processes in ways that may undermine physical health.



**How Much Sleep
Do I Need?**

How do you feel when
you have not had
enough sleep?

HOW MUCH SLEEP DO YOU REALLY NEED?

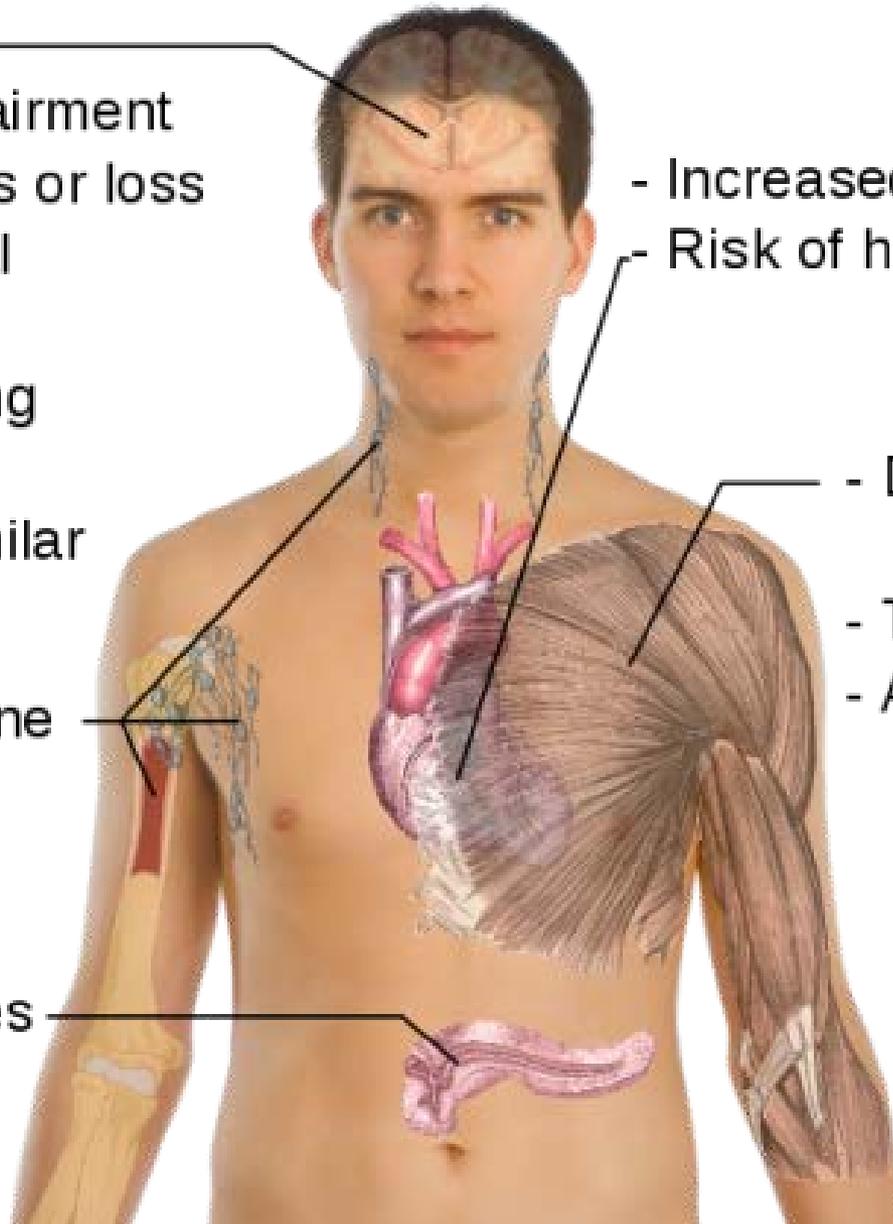


DREAM



Effects of Sleep deprivation

- Irritability
- Cognitive impairment
- Memory lapses or loss
- Impaired moral judgement
- Severe yawning
- Hallucinations
- Symptoms similar to ADHD
- Impaired immune system
- Risk of diabetes Type 2



- Increased heart rate variability
- Risk of heart disease
- Decreased reaction time and accuracy
- Tremors
- Aches

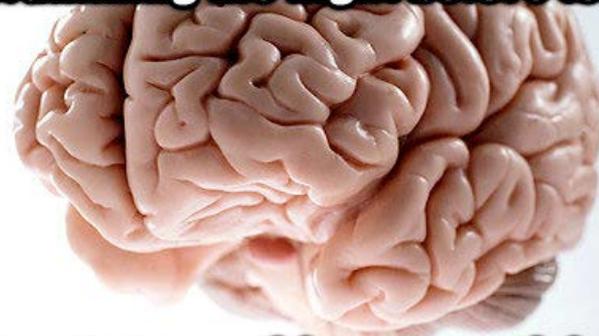
Other:

- Growth suppression
- Risk of obesity
- Decreased temperature

Can you make up lost sleep in 1 night?

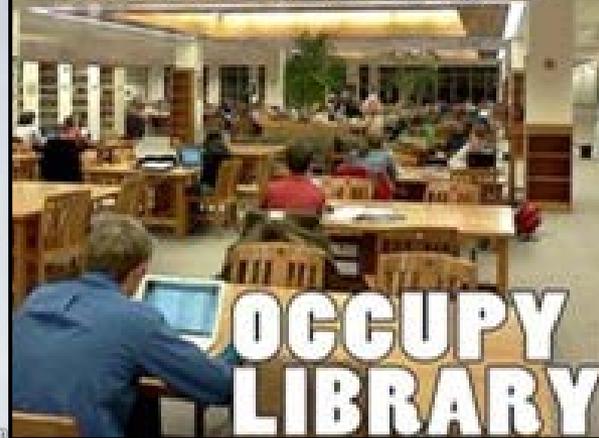
NO! Not initially, at least.

**Knows everything when
cramming the night before test.**



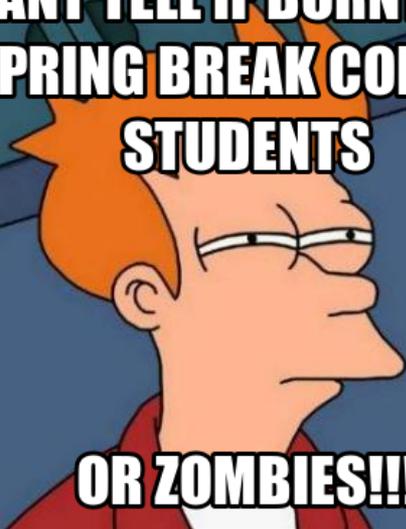
Forgets everything a month later

1% of the semester holds
99% of the stress



**OCCUPY
LIBRARY**

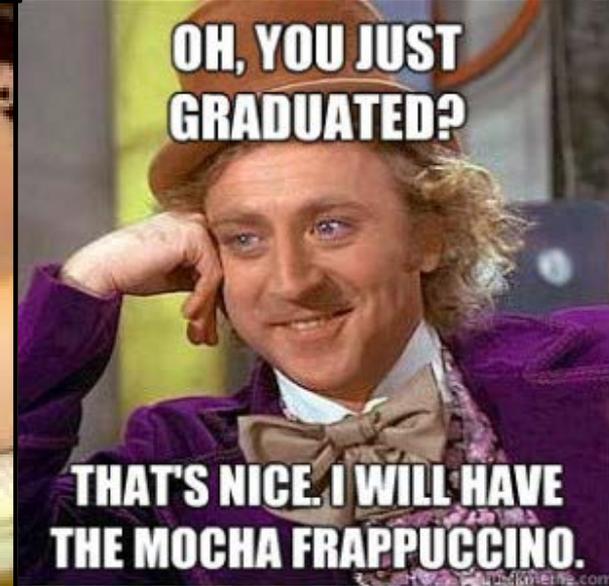
**CANT TELL IF BURNT OUT
SPRING BREAK COLLEGE
STUDENTS**



OR ZOMBIES!!!



**OH, YOU JUST
GRADUATED?**



**THAT'S NICE. I WILL HAVE
THE MOCHA FRAPPUCCINO.**

HOW MUCH
SLEEP
NEED?
DO YOU



Insomnia

Recurring problems in falling or staying asleep.

Insomnia is the most common sleep disorder.

Not: Just your once in a while

Not: Having trouble falling asleep because you have a big test tomorrow.

Insomnia: Not defined by the number of hours you sleep every night.



NEED TO WAKE UP EARLY?

WELL, BETTER STAY UP ALL NIGHT THINKING ABOUT HOW YOU HAVE TO WAKE UP EARLY

Narcolepsy

A disease marked by sudden & irresistible onsets of sleep during normal waking periods.

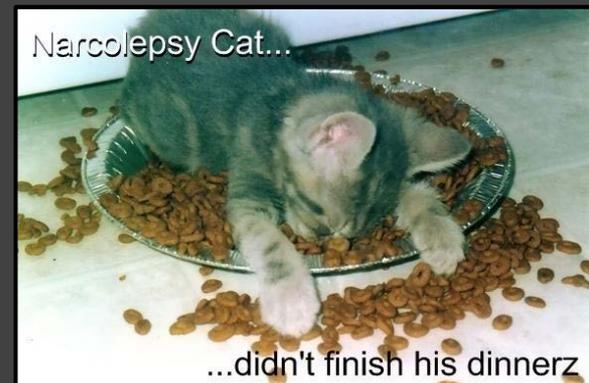
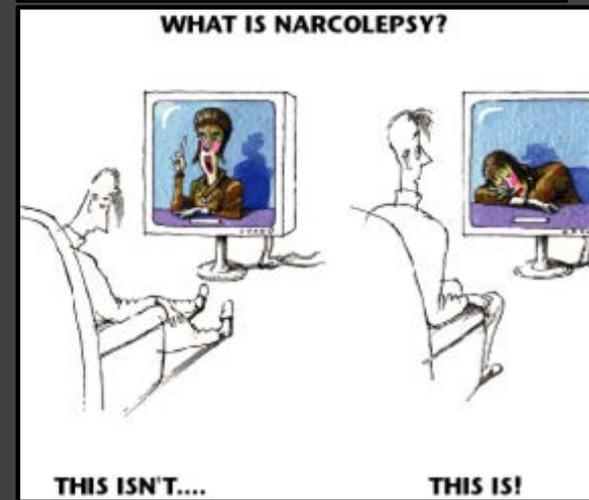
Chronic brain disorder that involves poor control of sleep-wake cycles. Periods of extreme daytime sleepiness & sudden, irresistible bouts of sleep that can strike at any time. These “sleep attacks” usually last a few seconds to several minutes.

Unpredictable & Uncontrollable sleep attacks

Lapse directly into **REM** sleep (usually during times of **stress** or **joy**). People with narcolepsy do not sleep any more or less than normal.



"On your application it says you have narcolepsy. What is that?"



YouTube: [Skeeter - the narcoleptic dog](#)



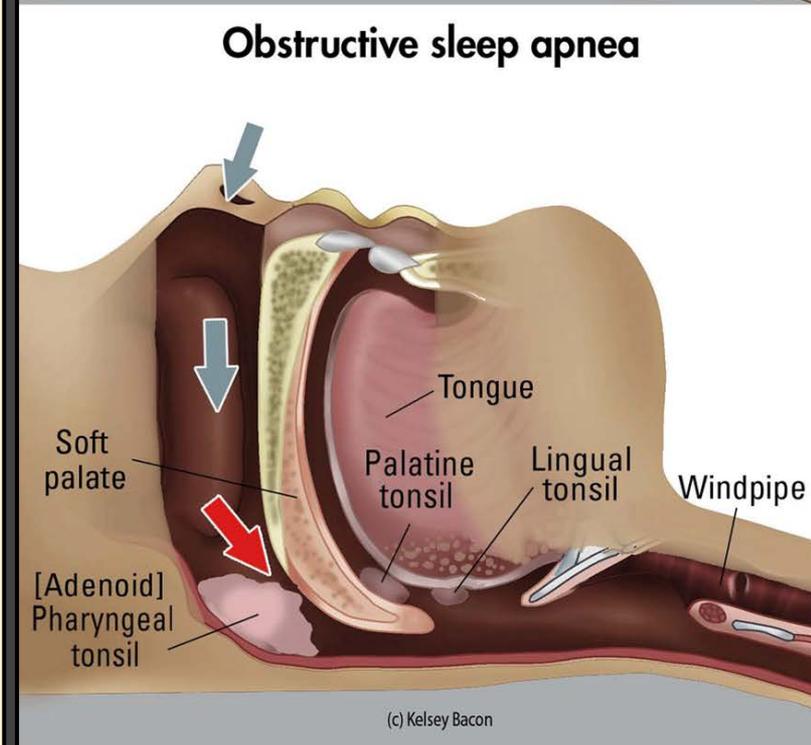
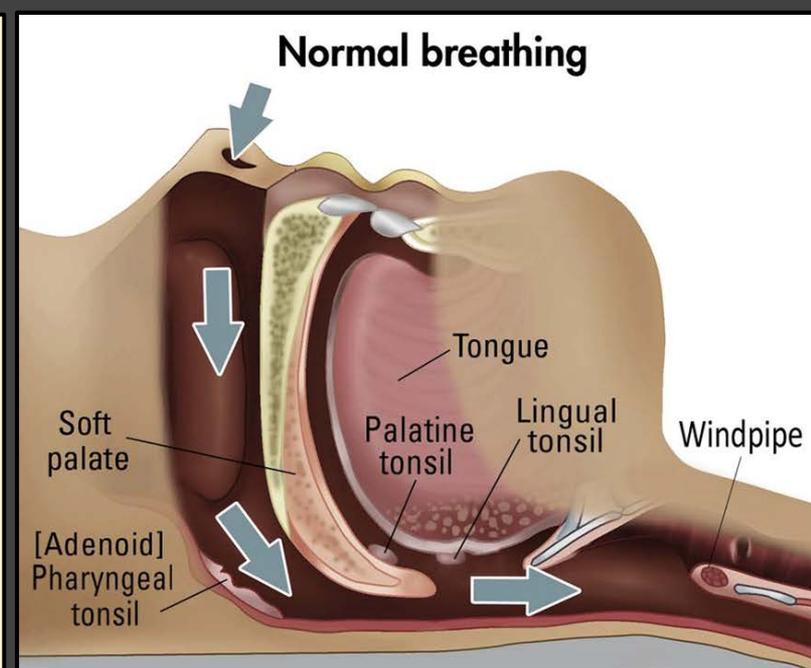
Sleep Apnea

Temporary cessations of breathing during sleep & consequent momentary re-awakenings.

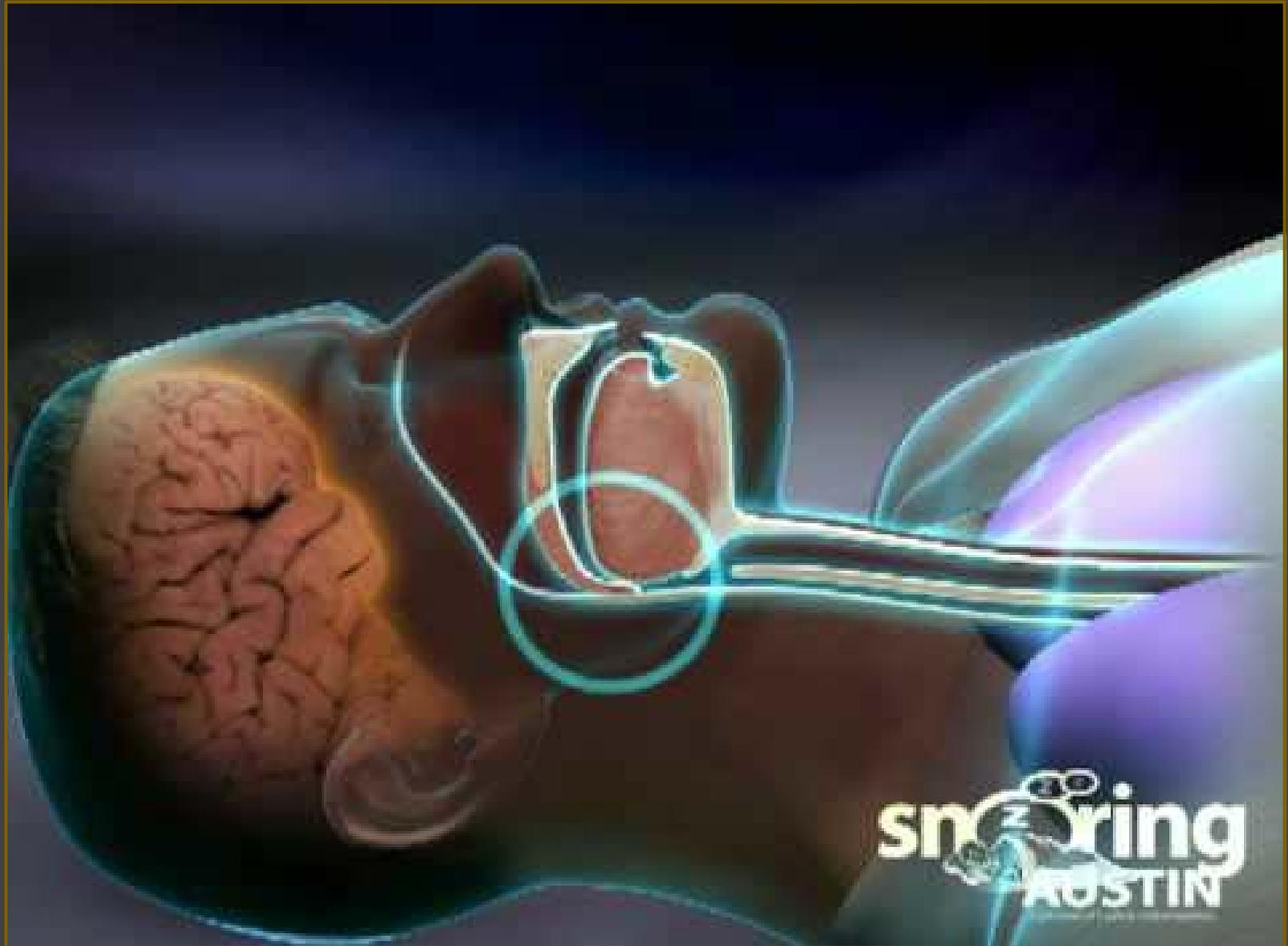
Instances of snoring & sleep apnea are much more frequent when a person is sleeping in the supine (or back) position.

In fact, back sleeping is so closely linked to sleep apnea that doctors prescribe side sleeping as a treatment for the condition.

Gravity forces the base of the tongue to collapse into the airway, which obstructs breathing & creates oh-so-pleasant snoring noises that keeps the neighbors up at night.



What Causes Snoring and Obstructive Sleep Apnea?





This is called "Marketing" -----
----->

Night Terrors

A sleep disorder characterized by high arousal and an appearance of being terrified.

Occur in **Stage 4**, non REM, and are not often remembered.



Bob takes care of this monster-under-the-bed business once and for all.



Sleepwalking

(Somnambulism)

Sleepwalking is a sleep disorder affecting an estimated 10% of all humans at least once in their lives.

Sleepwalking most often occurs during deep non-REM sleep (stage 3 or stage 4 sleep) early in the night.

Sleep walking is often triggered by disruption in regular sleep patterns or fever



SLEEPWALKING



Symptoms and Features:

Ambulation (walking or moving about) that occurs during sleep. The onset typically occurs in **prepubertal children**.

- ★ **difficulty in arousing the patient** during an episode
- ★ **amnesia** following an episode
- ★ episodes typically occur in the **first third of the sleep episode**
- ★ polysomnographic monitoring demonstrates the onset of an episode during **stage 3 or 4 sleep**
- ★ **Fatigue** (which is not the same as drowsiness)
- ★ **Stress** and **anxiety**

Why do we get nightmares?



How to control your dreams?



Taking the fear out of sleep paralysis

