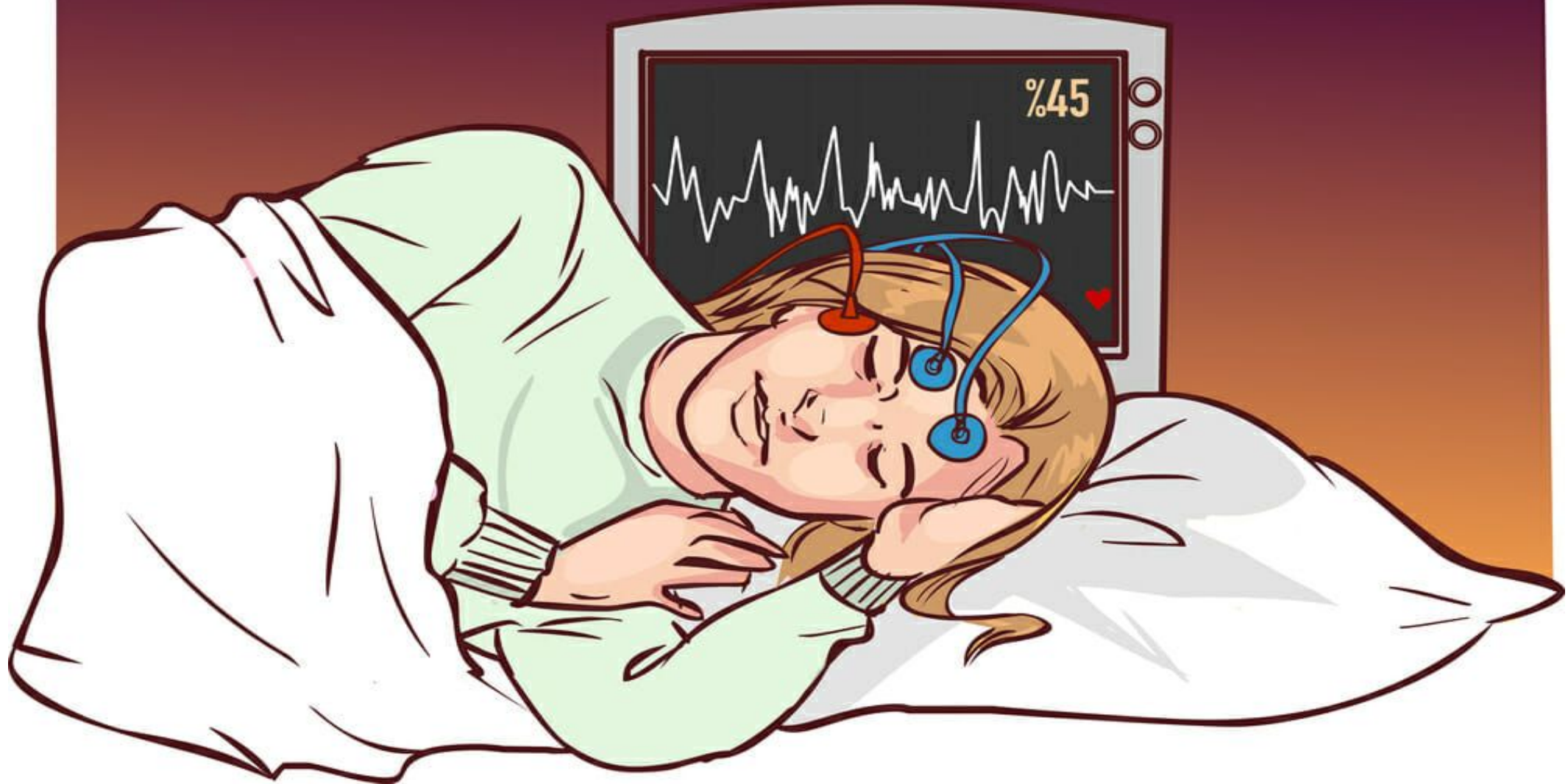




# Sleep Cycle



# The 4 Stages of Sleep



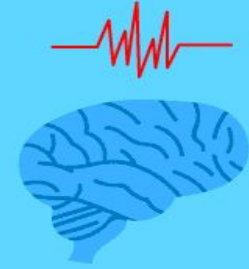
## NREM Stage 1

- transition period between wakefulness and sleep
- lasts around 5 to 10 minutes



## NREM Stage 3

- muscles relax
- blood pressure and breathing rate drop
- deepest sleep occurs



## NREM Stage 2

- body temperature drops and heart rate begins to slow
- brain begins to produce sleep spindles
- lasts approximately 20 minutes



## REM Sleep

- brain becomes more active
- body becomes relaxed and immobilized
- dreams occur
- eyes move rapidly

# WHAT HAPPENS WHEN YOU SLEEP



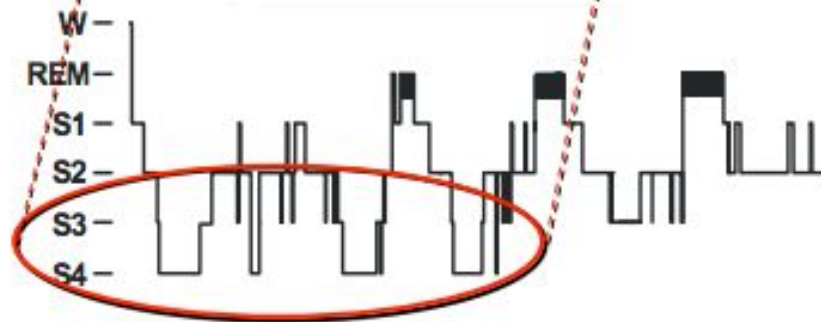
Learning



Consolidation



Retrieval



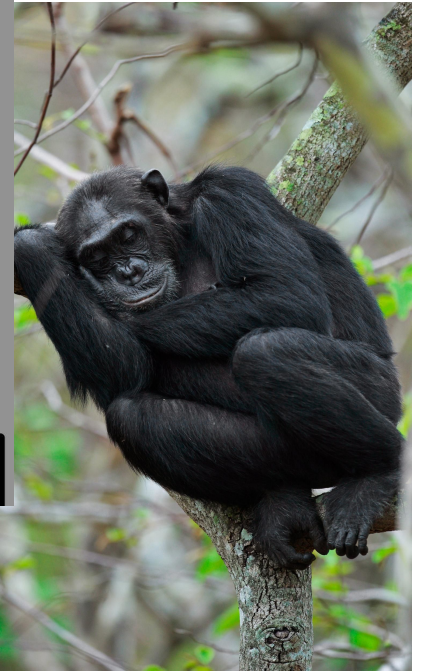
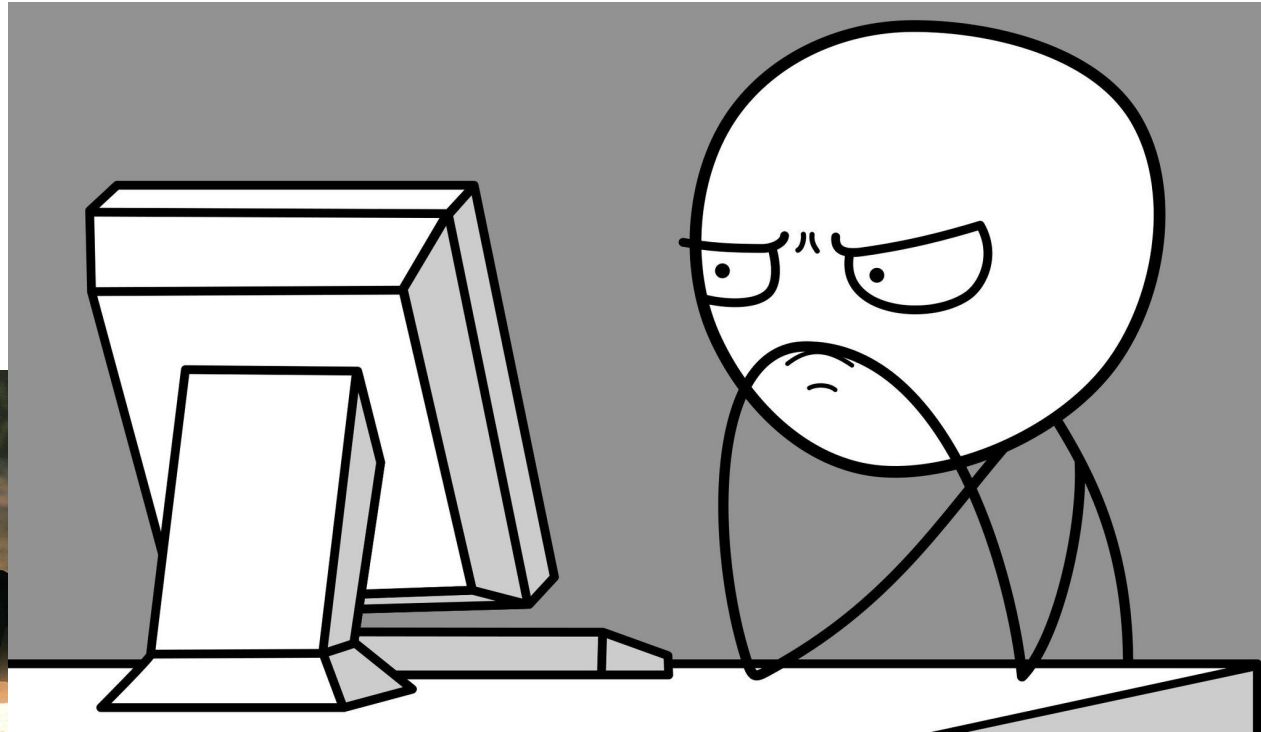
↑ SWS → ↑ consolidation

*Boosting SWS boosts memory! – Marshall et al. Nature (2005)*

# Why 8 hours?

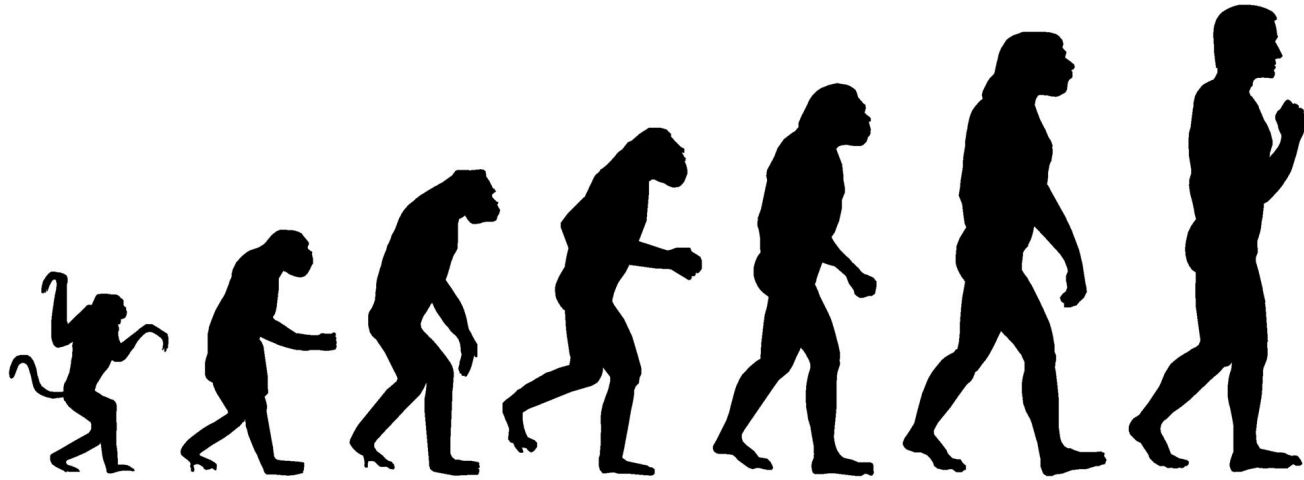


Only 2 hours sleep



17 hours of sleep!

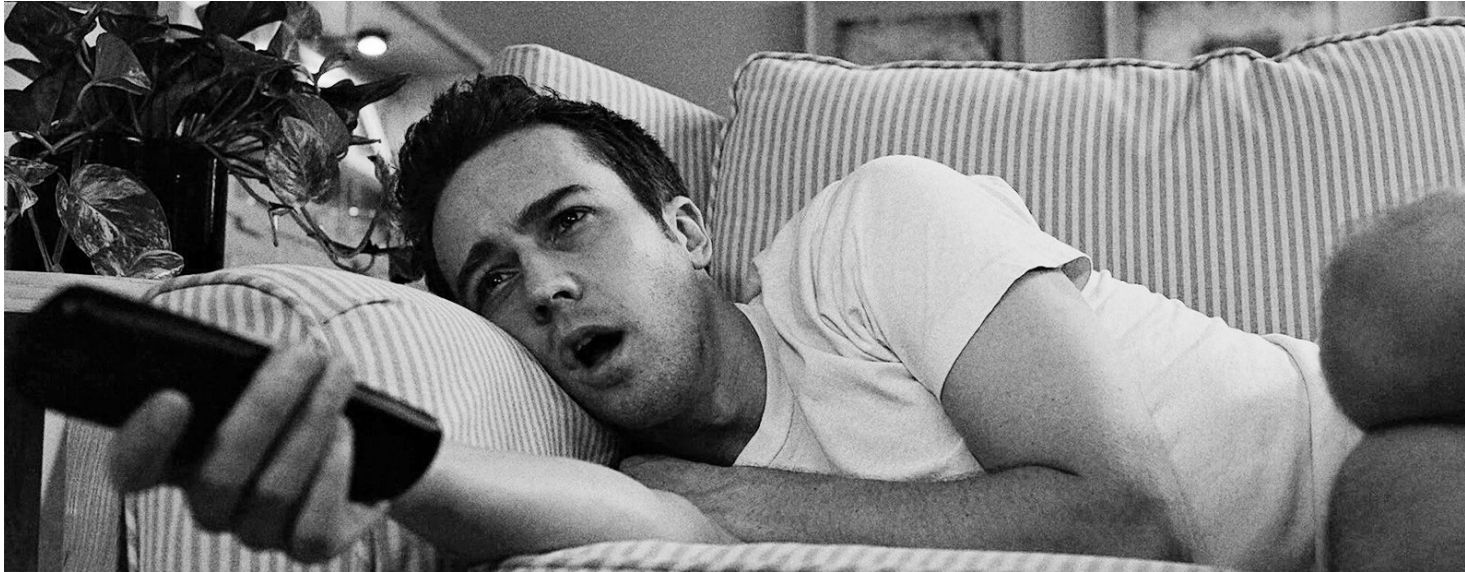
# Evolution to blame



**Homo sapiens**  
needs less sleep  
comparing to **Apes**  
(**Hominoidea**)  
because human  
beings use another  
strategy for surviving  
due to ability to walk  
on 2 legs



# Insomnia



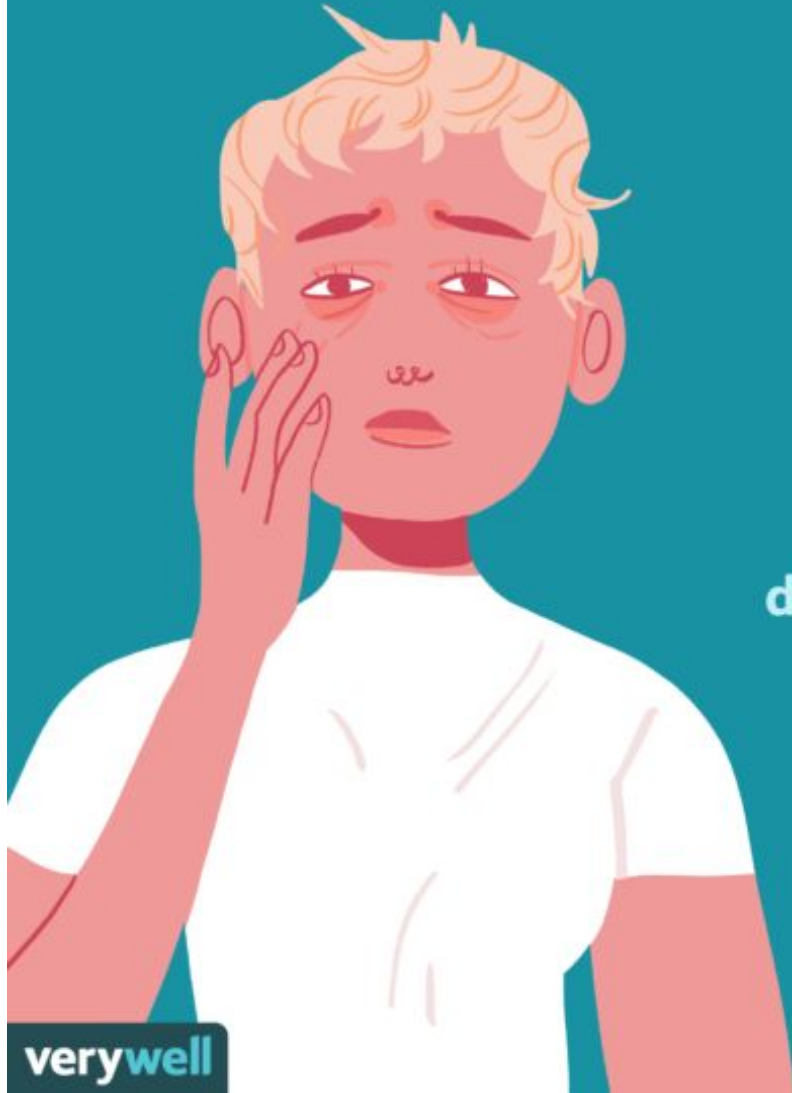
However, there is no certain pathophysiological mechanism of insomnia  
There are only some assumptions

## Causes of insomnia:

- Physiological stress
- Chronic pain
- Hyperthyroidism
- Heartburn,
- Restless leg syndrome,
- Menopause,
- Certain medications, and drugs such as caffeine, nicotine, and alcohol
- Other risk factors include working night shifts and sleep apnea.



# Common Sleep Deprivation Symptoms



**fatigue**



**mood changes**



**difficulty concentrating**



**memory problems**



**paranoia**



**hallucinations**

# EFFECTS OF SLEEP DEPRIVATION

MANY PEOPLE CONSIDER SLEEP A WASTE OF TIME AND SEE NOTHING WRONG IN SLEEPING LESS THAN 6 HOURS



RISK OF CANCER

LESS SLEEP >> +100% RISK



OBESITY

LESS SLEEP >> -15,3 LBS PER YEAR



WEAK IMMUNE SYSTEM

LESS SLEEP >> +100% RISK



RISK OF HEART DISEASE

LESS SLEEP >> +100% RISK



INCREASED BLOOD PRESSURE

LESS SLEEP >> +100% RISK



RISK OF DEATH

LESS SLEEP >> +20% RISK

