1. Functions of sleep and sleep "need"

Why do we sleep?
- Not fully understood
- All animals sleep despite danger
- Animals fully sleep deprives die ∴ biologically necessary
- Sleep is restorative: growth hormones surge during sleep, brain plasticity (forming skills + memories)
- Necessary for proper functioning – lack of sleep associated with illness + impaired functioning
- Flushing metabolic waste from brain

Functions of Sleep
- Conserve energy
- Enhance survival / adaptation
- Restorative / repair injury (NREM)
- Aid learning / memory consolidation (REM)

o Patients following brain injury – felt like getting worse sleep but in reality (according to graph), they were getting same amount of sleep

Sleep & Memory Consolidation
- Tower of Hanoi Task – when subjects rested a week after training, <u>40% improvement in performance.</u>
- If REM in experientially reduced (sleeping in a lab the night after training), no improvement seen.
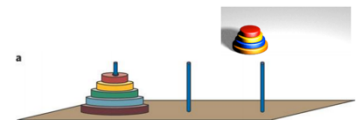
How much sleep do we need?
- On average, typical American slept 8hrs weekdays, 7 hrs weekends

How do we measure how much sleep we need?

Sleep "Need'
- Adults should sleep 7+ hours per night on regular basis to promote optimal health
- Sleeping <7 hrs per night on regular basis is associated with adverse health outcomes: weight gain, obesity, diabetes, hypertension, heart disease, stroke, depression, increased risk of death, impaired immune function, increased pain, impaired performance, increased errors, greater risk of accidents.
- Sleeping 9+ hrs per night on regular basis may be appropriate for young adults recovering from sleep debt, illnesses.

Individual Differences
- Some function well on 6hrs, some need 9+ hrs
- Average need for optimal functioning ~7.5 hrs sleep
- Developmental changes in sleep need?
- <u>Good measure of adequate sleep = quality of wake time</u>

- <u>Best way to judge your own sleep need is on vacation</u>