

## Chapter 10 Section 2

- Stages of sleep
  - o Cycles during the night
  - o REM – 25%
  - o NREM – 75%
    - Stage 1 – Falling asleep
    - Stage 2 – Sleep onset
    - Stage 3 – Deep Sleep
    - Stage 4 – Deep Sleep
  - o Sleep follows a pattern
    - 1 → 2 → 3 → 4 → 3 → 2 → REM
- Stages of sleep NREM
  - o 75% of the night
  - o Stages one through four
  - o Stage 1 – 4-5%
    - Between being awake and falling asleep
    - Little eye movement
    - Non-rhythmic brain activity
  - o Stage 2 – 45-55%
    - Onset of Sleep
    - Disengaged from surroundings
    - Breathing Rate and Heart Rate are regular
    - Body Temperature is down
    - Begins gradual transition to synchronized slow wave states
  - o Stages 3 (4-6%) and 4 (12-15%)
    - Long, slow waves marking brain waves marking less brain activity
    - Eyes are relatively inactive
    - Deepest and most restorative sleep
    - Blood Pressure and Breathing Rate down
    - Muscles are relaxed; Blood supply that goes to muscle is up
    - Hormones are released (Especially growth hormone)
  - o Sleeper moves back through stages two and three during the nights first REM episode
- Stages of Sleep – REM
  - o Research started in the 1950's
    - Researchers in France and US independently discovered REM
  - o REM – Rapid Eye Movement
  - o Sleepers closed eyes move rapidly beneath the eyelids
  - o AKA Paradoxical Sleep
    - There is physiological and brain wave activity indistinguishable from waking states
    - Large muscle groups are relaxed enough to be paralyzed
- Stages of sleep pattern overnight
  - o This REM period ends at the first cycle
  - o A healthy adult has 90 – 100 minute sleep cycles at night

- o After the first cycle, REM replaces stage one
- o Stages three and four diminish overnight
- o The last cycles are alterations between stage 2 and REM
  - Therefore you dream less in the first four hours of sleep and more in the last four hours
- Functions of REM Sleep
  - o The brains of people deprived to REM sleep will attempt to make more of it
  - o They will become irritable, anxious, and distracted
  - o Deprived people will experience a rebound when finally allowed to indulge
  - o Patterns of REM change as you age
  - o Infants get more REM than children and children get more than adults
  - o REM has a role in CNS development
  - o Longer sleep = more REM (9 hours has more REM than 6 or less)
  - o Improves memory for challenging
- REM and Dreaming
  - o Vivid dreams reported upon waking up from REM
  - o Adults report dreams 85 – 90% of the time for REM sleep and 50 – 60% for NREM
  - o Dreams reported in NREM (especially stage 2) at the end of the night
  - o Children less than 5 rarely report dreams
  - o Dream length matches REM sleep (longer the phase = more complex story)
- Abnormalities of Sleep
  - o Insomnia
    - Many adults have occasional insomnia
    - Serious/chronic insomnia accompanies disorders such as depression
    - Beating insomnia requires good sleep hygiene
  - o Sleep Apnea
    - Impairs quality and length of sleep
    - A lapse of breathing for a minute or more may occur
    - Association with severe snoring
    - Obese middle aged and elderly men are more vulnerable
    - Other cases associated with abnormalities in the medulla
  - o Narcolepsy
    - Sudden attacks of extreme irresistible sleepiness
  - o Hypersomnia
    - Too much sleep that doesn't refresh you
  - o Restless leg syndrome