

Sleep and Dreams

What is sleep?

- A state of altered consciousness, characterized by certain patterns of brain activity and inactivity.
 - A state we do not know we are in until we leave it.
 - Characterized by unresponsiveness to the environment and usually limited physical mobility.

Why do we need sleep?

- Replenish chemicals used during waking hours
- Helps restore and build brain tissue
- Plays a role in the growth process
- Allow the brain to recover from exhaustion and from stress
- Clear the mind of useless information
- Sleep is for remembering

Sleep Statistics

- If allowed, most humans will sleep at least 9 hours a night.
- Newborns spend $\frac{2}{3}$ of their day asleep
- Sleep takes roughly $\frac{1}{3}$ of our lives (25 years)
- Teenagers typically need 8-9 hours of sleep, but now average less than 7

Effects of Sleep Deprivation

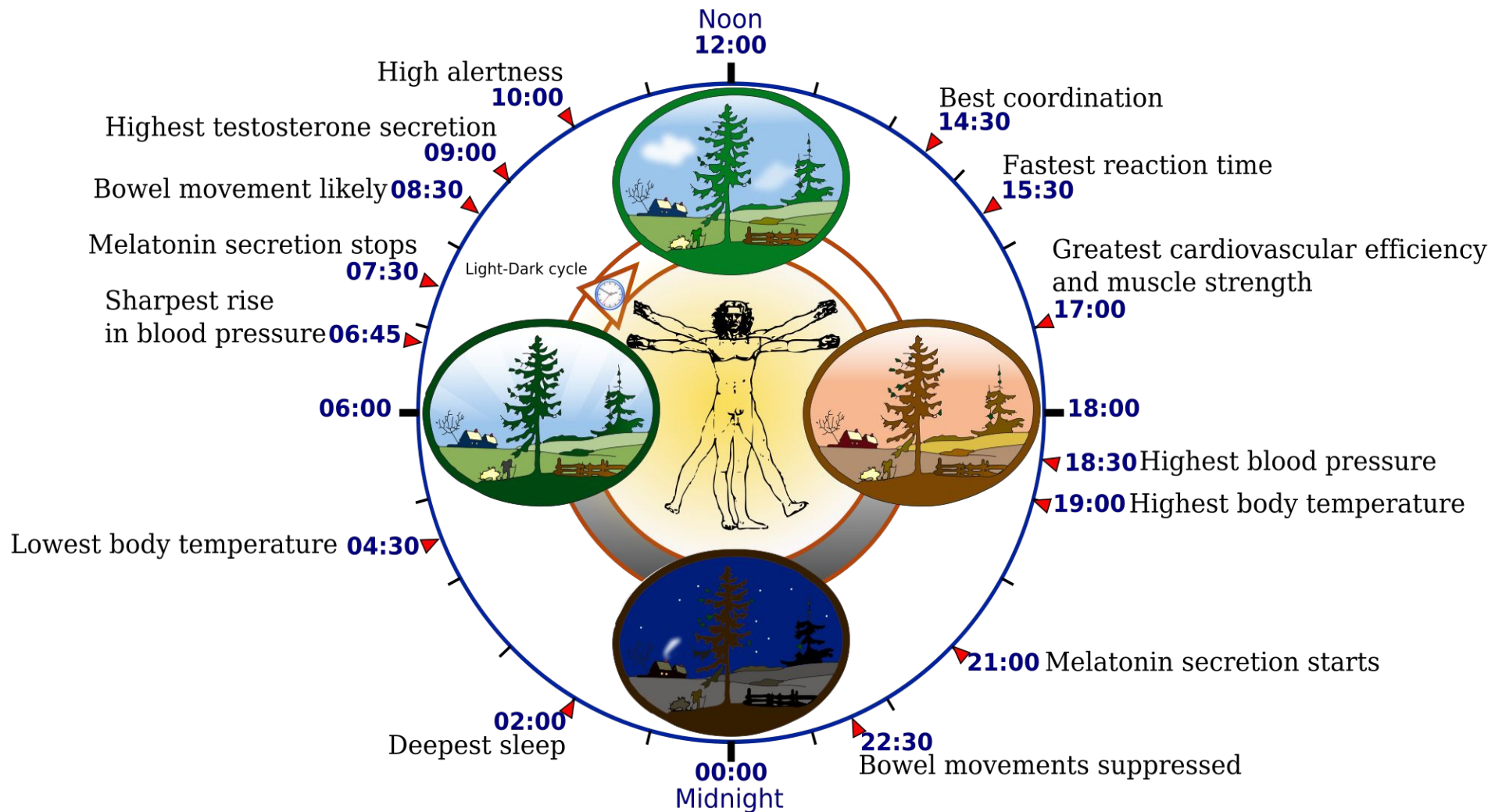
- Fatigue
- Diminished immunity to disease
- Hand tremors
- Irritability
- Inattention, impaired concentration
- Slower reaction time and increased errors on visual tasks
- Chronic sleep dept alters metabolic rate and hormonal functioning
- Slowed performance
- Impaired creativity
- Impaired communication

Circadian Rhythms

The body's 24 hour biological clock that roughly follows the 24 hour cycle of a day and night.

An internal biological clock that regulates the sleep-wakefulness cycle

Circadian Rhythm



Stages of Sleep

- 4-5 stages that we pass through every 90 min
- 37% of people rarely report never having dreams, although everyone does
- 100 minutes per night on average is spent on REM sleep

Stage 1

- Light sleep
- May experience fleeting images resembling hallucinations
- May have a sense of falling (body may jerk)
- Hallucinations may be incorporated into memories

Stage 2

- 45-55% of night's sleep
- Breathing and heart rate slow
- Sleep talking most commonly begins here

Stage 3

- A few minutes long
- Transitional phase
- Brain begins to generate slower waves

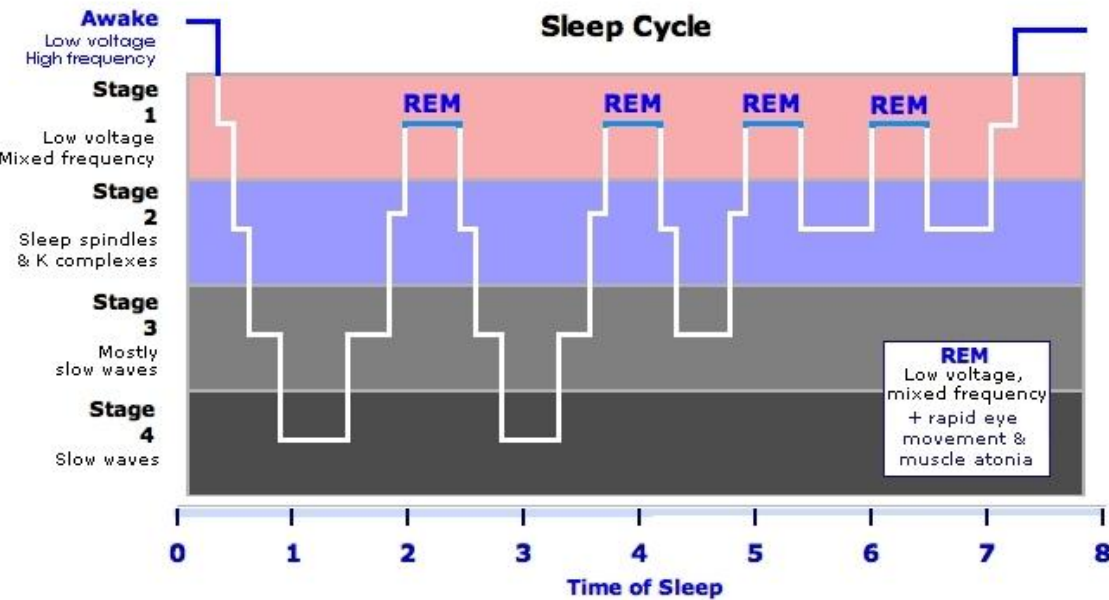
Stage 4

- Deep sleep
- Rhythmic breathing, limited muscle activity
- At the end of this stage children walk in their sleep or wet the bed
- 20% of 3-12 year olds walk in their sleep
- Only 5% have repeat episodes

Stage 5

- After stage 4 we descend back down the stages in order 4-3-2 and into REM sleep
- REM (rapid eye movement) is dream sleep
- Brainstem blocks the messages leaving your muscles so relaxed you are essentially paralyzed
- As night progresses, stage 4 disappears and REM gets longer

Sleep Cycle



Your brain waves follow a pattern as you descend into deeper sleep.

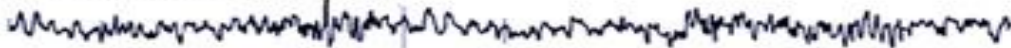
Waves start to slow down and get larger until you enter rem sleep.

Here they return to a short and frequent wave pattern similar to when we are awake.

Relaxed / Waking



Stage 1 Light Sleep



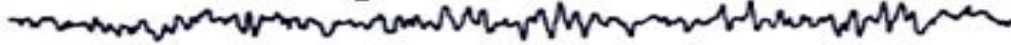
Stage 2 Light Sleep



Deep Sleep



REM / Dreaming



Sleep Difficulties

- 10-15% of adults complain of sleep difficulties
- It is normal, natural and adaptive to experience sleep difficulties when we are anxious or excited

Sleep Difficulties

- The most common quick fixes (alcohol and sleep medications) aggravate the problem
 - Alcohol reduces REM sleep causing fatigue the following day
 - Sleep medications require increasing doses as you become used to the drug

Improving Sleep

- Downtime 1 hour before bed
- Use dimmer lighting, **avoid screens**
- Avoid caffeine after late afternoon
- Avoid rich food before bed
- Drink a glass of milk
 - Provides raw materials to create **serotonin**: a neurotransmitter that facilitates sleep
- Exercise regularly but not late in the evening
- **Reassure yourself that a temporary loss of sleep causes no great harm**

Sleep Disorders

- Sleepwalking
- Nightmares
- Night Terrors
- Insomnia
- Sleep Apnea
- Narcolepsy

Research assignment

Dreams

- **Dreams** – a sequence of images, emotions and thoughts passing through a person's mind.
- **Lucid Dreams** – when we are aware that we are dreaming, during a dream, such that we can sometimes change the actions or events in the dream.

Facts About Dreams

- We spend about **6 years** of our life in dreams.
- Freud believed that all dreams contain clues to thoughts the dreamer is afraid to acknowledge in his or her waking hours.
- Some aboriginal peoples believe that when dreaming, people enter a spiritual world where they interact with those who have passed away.

Dream Theory

- 3 theories of why we dream:
 1. To help us express unacceptable feelings
 2. To help us sort out the day's events
 3. To help us remember things

Daydreams

- Requires a low level of awareness
- Usually occurs when we are in situations that require little attention or when we are bored
- **Purpose of Daydreams:**
 - Remind us of or prepare us for future events
 - Improve our creativity by generating thought
 - Allows us to control our emotions