

Sleep & Chronic Pain

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What Is Sleep?

- A reversible state during which voluntary movements do not occur
- Controlled by a circadian clock
- Accompanied by an increase in arousal threshold, such that stronger sensory stimuli are required to elicit a response from the animal
- Controlled by a homeostatic system that ensures adequate levels of the state
- A period of sleep deprivation is followed by a compensatory increase in sleep, or sleep rebound, which reflects the essential nature of sleep.

Campbell & Tobler, 1984

WHY DO WE NEED TO SLEEP

It's a basic daily need!

To maintain constant body temperature

To maintain normal metabolism of body

To restore and repair cells in the body that were damaged while we were awake

To consolidate information processed by the brain during the day

**Strengthen "learned" information
"Prune/Purge" unimportant information**

To function best, we all require consistent, good quality sleep!

WHAT IS THE RIGHT AMOUNT OF SLEEP

• **Varies from person to person**

• **Related to:**

- Age
- Activity level
- Medical conditions
- Genetics
- Life circumstances

Research Indicates 6-9 hours (preferably 8-9)

SLEEP INFORMATION

• Aging

- 50% of Older Adults report sleep problems
 - "light sleep", frequent awakenings, & waking too early
 - Wake more often during the night
 - Wake too early in the morning without feeling rested
 - The period of deepest sleep declines with age

• Medical Problems

- Bi-directional nature of relationship
- Prostate enlargement, diabetes, sleep apnea
- Pain
- Fibromyalgia

SLEEP INFORMATION

• Genetics

- sleep is genetically controlled
- environmental factors can impact the duration and intensity of sleep, genetic regulation is borne out by the heritability of sleep traits

• Life circumstances

- Where you live
 - Street lights, noise
 - Living in high latitudes (north of 63°)
- Your employment
 - Working and living in different time zones
 - Working a schedule opposite of your clock
- Your bed partner(s)
 - People, pets, babies

SLEEP INFORMATION

• Medications Which Negatively Affect

- Benzo's
- Opioids
- Gabapentin
- Withdrawal from medication which affect the Central Nervous System
- Sleeping Medications/Hypnotics (Ambien, Lunesta)

How Do They Affect One's Sleep

- *Increases sleepiness*
- *Decreases sleepiness*
- *Forget how to sleep*
- *Too much napping often during the day*

SLEEP REGULATION

SLEEP DRIVE (sleep debt)

- Body's need for sleep
 - Similar to our hunger drive
 - Body has less need for sleep after we wake up
 - The longer we're awake, the more our need for sleep increases
- Napping = "sleep snack"
 - Reduces our sleep drive
 - Makes it more difficult to sleep

SLEEP REGULATION

CIRCADIAN RHYTHM (sleep clock)

- Determined by our **biological** clock
- When your clock is *out of sync*...
 - Sometimes, there's a mismatch between your clock and society's clock.
 - "Night owls" vs "Morning lark"

Best sleep occurs when sleep drive is strong and necessary bedtimes/wake times are in sync with our natural sleep clock.

Think About a Night You Sleep Well

- You got 6 hours of more of sleep
- You woke up stiff and sore because you perhaps slept too long – although you were rested
- You have your coffee or tea, hot shower felt good it was a perfect peaceful morning
- You still had pain but this morning it didn't seem the pain was that important
- You weren't suffering as much as you had in the past

THIS IS AN EXAMPLE OF HOW A POSITIVE ATTITUDE CAN AFFECT PAIN
GOOD MOOD AND OPTIMISTIC OUTLOOK/FEELINGS HAVE LESSENER YOUR PAIN

SLEEP STAGES

Sleep Stages

- Sleep is not passive. It is an active and changing process throughout the night
- **2 key stages of sleep**
 - Non-REM sleep
 - Rapid Eye Movement (REM) sleep
- Sleep is measured through brain wave activity patterns

Sleep Problem Vs. Insomnia

- **Approximately 75% of Veterans in primary care report sleep problems**
 - 40% have probable insomnia diagnosis
- **The rate of diagnosed insomnia in soldiers has increased 10-fold between 2001 and 2009**
- **Service members who are deployed are more likely to report sleep difficulties both during and after deployment**
 - Depression
 - Anxiety
 - Posttraumatic Stress Disorder

Insomnia Disorder

- **Poor sleep is common reaction to stress**
 - Individual differences determine how poor sleep leads to insomnia
- **75% of people with insomnia can identify a trigger to their insomnia**
- **Diagnosis requires**
 - **Difficulty initiating sleep, difficulty maintaining sleep, or waking up too early**
 - One or more is present at least 3 times a week, for at least 3 months
 - **Poor sleep occurs despite adequate opportunity and circumstances for sleep**
 - **Poor sleep is associated with daytime impairment and distress**

Chronic Pain & Insomnia

- **Both are major health problems worldwide.**
- **Independently linked to significant negative impact on functioning**
- **Chronic pain and insomnia can have profound negative consequences when they occur independent of each other**
 - Quality of life, psychiatric illnesses, medical conditions, and disability.
- **Together their impact is MAGNIFIED**
 - Loss of quality of life, productivity, resilience

How Are They Related?

The **GREATER** the amount of sleep deprivation → the **LOWER** the pain threshold.

Presence of pain is associated with sleep disruptions
Relationship between sleep disturbance and chronic pain is a vicious cycle.

Chronic Pain and Sleep



Chronic Pain

Negative
Mood States

Sleep
Disturbance

Enhanced pain
sensitivity

Mental Health Disorders Commonly Associated with Chronic Pain

- **Depression**
 - 5-17.1% in general population
 - **23-78% in chronic pain population**
- **Anxiety**
 - 1-25% in general population
 - **10.6-62.5% in chronic pain population**
- **Post-Traumatic Stress Disorder (PTSD)**
 - 7.8% in the general population
 - **15%-35% of patients with chronic pain**

What Happens After a Night of Better Sleep or Good Nights Sleep Look Like

- Awaken and gotten up stiff and sore but you actually feel rested
- Your Coffee Tasted Good
- Your Morning Shower was Refreshing
- You realize your aren't suffering as much

ALL OF THESE LEAD TO A POSITIVE OUTLOOK IN THE DAY

ONE EXAMPLE OF HOW A POSITIVE OUTLOOK CAN AFFECT PAIN

Sleep is the trump card...not sleeping well is not an option in the successful treatment of chronic pain

Source David Hanscom MD

Research indicates that if one sleeps at night one will feel calmer and more relaxed during the day

STRATEGIES TO PROMOTE QUALITY SLEEP

May require trialing many options

1. Nap during the day BUT NO MORE THAN 10-15 min
2. Exercise during the day (always before 4 pm)
3. Schedule worry time – (prior to 2 hours before bedtime)
4. Avoid Caffeine, alcohol and nicotine
5. Lighten up on dinner and after dinner snacks – avoid carbs
6. Balance fluid intake (finish the bulk of your water before 4 pm)

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7. Practice Mindfulness Meditation/Stress Reduction
8. Avoid hot baths before bedtime (at least an hour before)
9. Keep cool while you sleep (65 degrees or less)

STRATEGIES TO PROMOTE QUALITY SLEEP

10. Block Out Noise
11. Invest in quality pillows and mattresses
12. Keep pen and paper (Sleep Diary) next to your bed – so if you awoken with a thought jot it down
13. Darken the Room
14. Use your bed only for sleep
15. Keep a consistent sleep schedule (6 to 8 hours)

TREATMENTS TO IMPROVE SLEEP/ INSOMNIA

- Aromatherapy
- Exercise
- Yoga
- Keep a sleep diary or worry journal
- If you have trouble waking up during the night – get up and go to a separate room, DO NOT WATCH TV, journal, read, listen to soothing music, meditate, diaphragmic breathing etc
- Reduce the weight of your blankets or comforters
- Speak with MD if problems with sleep exist – may need a sleep study, could be changes with your thyroid

Sleep and Chronic Pain

QUESTIONS?