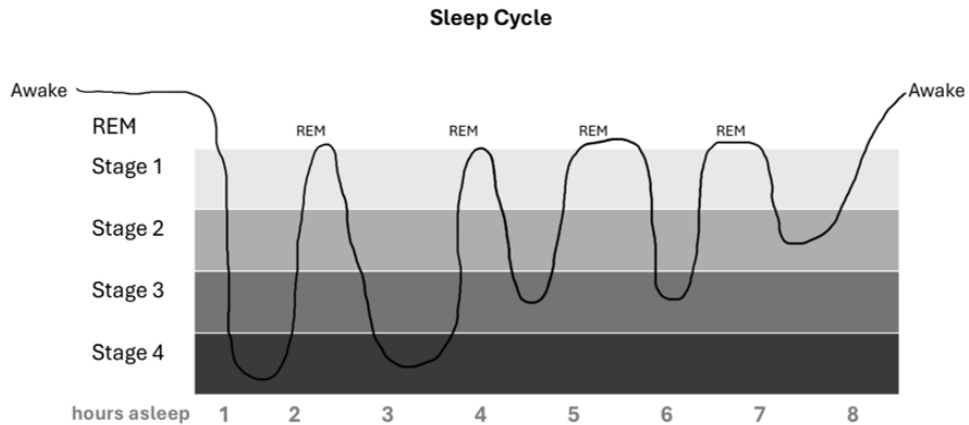


OT AND SLEEP

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[STAGES OF SLEEP]

Stage 1 (1-7 min)

- Process of wakefulness to sleep
- Brain waves slow
- Temperature drops by 2-3°F (1°C)
- Wakes Easily
- Muscles relax

Stage 2 (10-25 min)

- First phase of established sleep
- Minimal eye movement
- HR and breathing slow
- Irregular brain waves
- May comprise half of sleep
- More intense stimuli required to wake than stage 1

Stage 3 (only a few minutes)

- Brain wave activity drops to slow wave
- Breathing slows/ more regular
- BP and HR fall to 20-30% of waking rate

Stage 4 (20-40 min in first cycle)

- "Deep sleep"
- Slow brain wave activity
- Breathing slow and regular
- Requires more stimulus to wake than stage 2
- Time spent here is mostly in the first half of the night

REM (first cycle: 1-5min; second cycle 30 min)

- Body temp, BP, HR and RR increase and become irregular
- EEG with decreased amplitude mimicking a waking state
- Motor neurons are inhibited = paralysis except for diaphragm and ocular muscles
- Rapid horizontal eye saccades
- Thermoregulation inhibited
- Emotional aspect of sleep ("overnight therapy")
- Emphasized in the second half of time asleep

OT Scope of Practice: Sleep is a Major Occupation in the OTPF.
It is the only occupation that cannot be completed by another.

[SLEEP ASSESSMENT]

Screening

- How was your sleep?
- Do you feel like you got enough sleep (quantity)?
- Do you feel refreshed after your sleep (quality)?
- What kept you from getting good sleep?

Observation

- Positioning
- Lines/tubes and medical devices
- Routines
- Environment
- Bed mobility independence, strength, ROM, continence

Self Report

- Sleep Diary

General Sleep Assessments

- Pittsburgh Sleep Quality Index (PSQI)
- PROMIS Sleep Disturbance Instruments
- Occupational Profile of Sleep
- Sleep Disorders Screening Questionnaire
- NHS Sleep Assessment Screening
- Functional Outcome of Sleepiness Questionnaire
- Holland Sleep Disorders Questionnaire

Physiologic Impact of Sleep Deficits

General Insufficiency:

- Decreased immunity
- Impaired tissue repair
- Impaired cognition
- Hormonal imbalance
- Impaired emotional regulation
- Impaired overall healing

Lack of REM Sleep:

- Cognitive deficits
- Impaired emotional health
- Strongest sleep-related predictor of longevity

Lack of NREM 4:

- Waking up feeling “more tired”

Recommended Progression of Interventions for Sleep Dysfunction (not specific to OT)

Environmental/Behavioral/Physical

Nutrition

Supplements

Prescriptions

Environmental/Physical Interventions

Light	<ul style="list-style-type: none"> • Morning sunlight within first 30-60 minutes of waking • Can disturb sleep, but a small amount of light can be calming (especially in an unfamiliar environment) and assist with orientation • Educate family and staff on proper light use • Room arrangement for lighting (bright lights/natural lights in AM; low/warm lights in PM) • Red light prior to sleep • Smart technology for lighting
Sound	<ul style="list-style-type: none"> • Blocking sound/diffusing noise: Ear plugs, ocean sounds/white noise • Music- decreases anxiety, 60bpm, low tones, repetitive music
Smells closely related to emotional well-being	<ul style="list-style-type: none"> • Aromatherapy • Removal of noxious stimuli/smells • Utilization of familiar scents
Temperature needs to drop 1-3°F to fall asleep too warm will cause frequent awakening	<ul style="list-style-type: none"> • Keep the room cool (~67°F) • Layer blankets • Weighted blankets for anxiety (this may cause overheating) • Temperature controlled mattress covers • Positioning to allow hands or feet out from underneath the covers to help cool down during sleep • Warm bath or shower before bedtime improves ability to fall asleep and sleep deeply. The warm water raises core body temperature, then the subsequent cooling of core body temperature that occurs after facilitates falling asleep.
Pain Management	<ul style="list-style-type: none"> • Education in/trialing sleep positioning for comfort • Exercise/ HEP during the day to reduce musculoskeletal pain • Collaborate with medical team for medication timing in routines
Family Presence	<ul style="list-style-type: none"> • Family presence can provide sense of protection, facilitator/advocate, historian, coach, caregiver • Family/caregivers are at risk for sleep deprivation • Families can help monitor light, promotion of mobility, communication, and quiet night environment
Physical Interventions	<ul style="list-style-type: none"> • Daytime exercise programs- improved total time asleep and sleep quality, reduced daytime fatigue. • Types of exercise proven to improve the above: <ul style="list-style-type: none"> - Balance - Aerobic - Balance - Coordination • Sleeping flat vs seated • Communication devices

Behavioral Interventions

Routines

- Timing
 - Wake and sleep at the same time every day
 - Allow for 7-9hrs per night
 - Keep naps <90min and not within 2 hrs of going to bed
 - Align with chronotype
- Wind-Down Routines
- ADL Routines
 - Bathing
 - Toileting
 - Awake time routines (activity vs rest)
- Re-create routines in non-home environment

Cognitive Strategies

- Grounding techniques
- Progressive muscle relaxation
- Meditation or non-sleep deep rest (NSDR)
- Re-orientation strategies
- CBT (CBTi)

Technology

- Apps
- Smart device night settings
- Sound machines
- Smart technology
- Sleep tracking devices

Advocacy

- Facilitate physician involvement
- Validate that sleep insufficiency is not "normal"
- With caregiver/Medical staff

Apps for Sleep

(many of these have a free component and work fine without paid upgrades)

Insight Timer- Great for guided meditation, breathing, yoga nidra, and sleep playlists.

Calm- sleep, meditation, relaxation.

Reveri- Science-backed meditation/hypnosis app for sleep.

Tide- soundscapes, breathwork, scheduled bedtime reminders/bedtime routines, meditation.

Spotify- thousands of white noise and sleep playlists.

BetterSleep- sound machine (can choose several to play at a time), sleep goal setting and bedtime routine alarms.

Pzizz- guided sleep preparation narration and soundscapes for sleep and napping.

Sleep Machine- customizable white noise, sleep timer, bedtime routine reminders.

Libby app- (needs a library card) free rental audiobooks from the library. There is a sleep timer function. This is very helpful if reading is physically challenging or a typical part of a bedtime routine.

Apple Health- (used with an apple watch) there is a sleep section in the health app. You can customize sleep focus to disable certain apps to prevent disruption of sleep, sleep goals, and recommended sleep schedules.

Phone functions: most smart phones have a "night" setting in the display setting to reduce blue light.

Technology for Sleep

Smart Home:

- Voice control to turn on/off lights and change light color/temperature
- Create morning and bedtime routines for timing of sleep, control of temperature, and light
- Hand/vision-free orientation cues (avoids light during sleeping hours)

Other:

- Temperature-control mattress pads
- Smart watch
- Wearable sleep tracker
- Reading devices
- Smart clocks
- Ring/UV lights

(please see accompanying slides for references)