



Insomnia



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Disclosures

Neel Doshi, DO

► **No relationships to disclose.**

Objectives

01

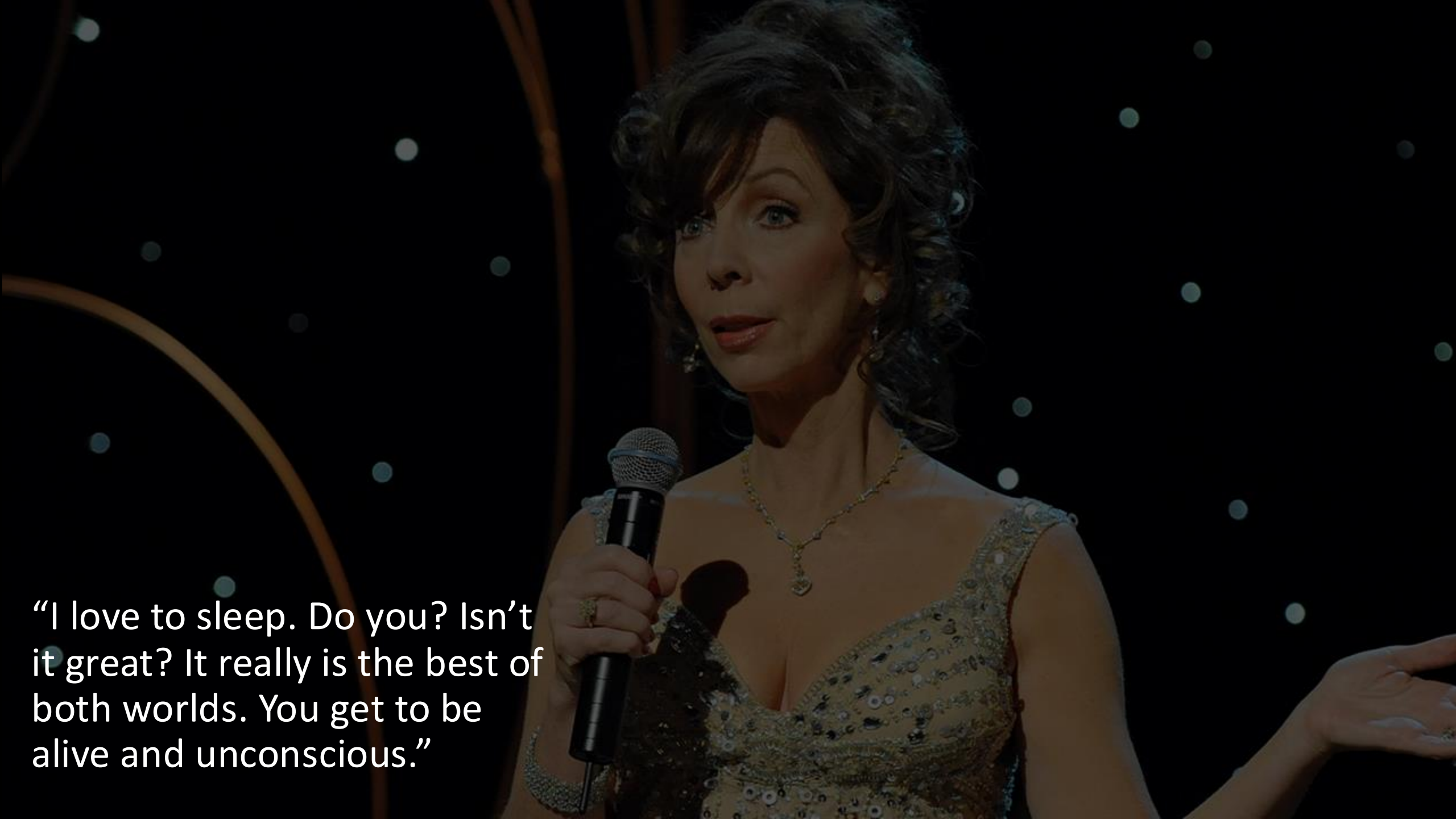
Learn basics of insomnia (REM vs nREM sleep)

02

Understand unique considerations for patients

03

Be able to discuss psychological aspects of sleep



“I love to sleep. Do you? Isn’t it great? It really is the best of both worlds. You get to be alive and unconscious.”

Acute vs Chronic Insomnia

Acute Insomnia

- < 1 month, precipitant usually known (psychologic vs physiologic stress)
- Discuss the role of the stressor in causing insomnia– allows for some semblance of control
- Short-term sedative use may be appropriate

Chronic Insomnia

- CBT-I; effective for most but not always easy to access; apps can help

Jeopardy

- **What duration must insomnia last to be considered chronic?**
 - A. 1 month
 - B. 3 months
 - C. No specific time period but (+) impairment in functioning
 - D. Most nights over 6 month period
- *My mind is set on overdrive
The clock is laughing in my face
A crooked spine
My senses dulled
Past the point of delirium.*

Chronic Insomnia

“The essential feature of chronic insomnia disorder is a frequent and persistent difficulty initiating or maintaining sleep that results in general sleep dissatisfaction.”

- At least **three months**
- 3 + days a week
- Must have an opportunity to sleep
- Impact on daytime function

Insomnia / Consequences

Mood disorders (Szklo-Coxe et al. Am J Epidemiol 2010;171:709-720 and Sivertsen et al. J Sleep Res 2014; 23:124-32)

PTSD and Suicidal Ideation Post Deployment (Wang et al. Sleep 2019; 42:1-9)

Falls (Cauley et al. JBMR 2019;34:464-474)

Hypertension (Jarrin et al. Sleep Med Rev 2018;41:3-38)

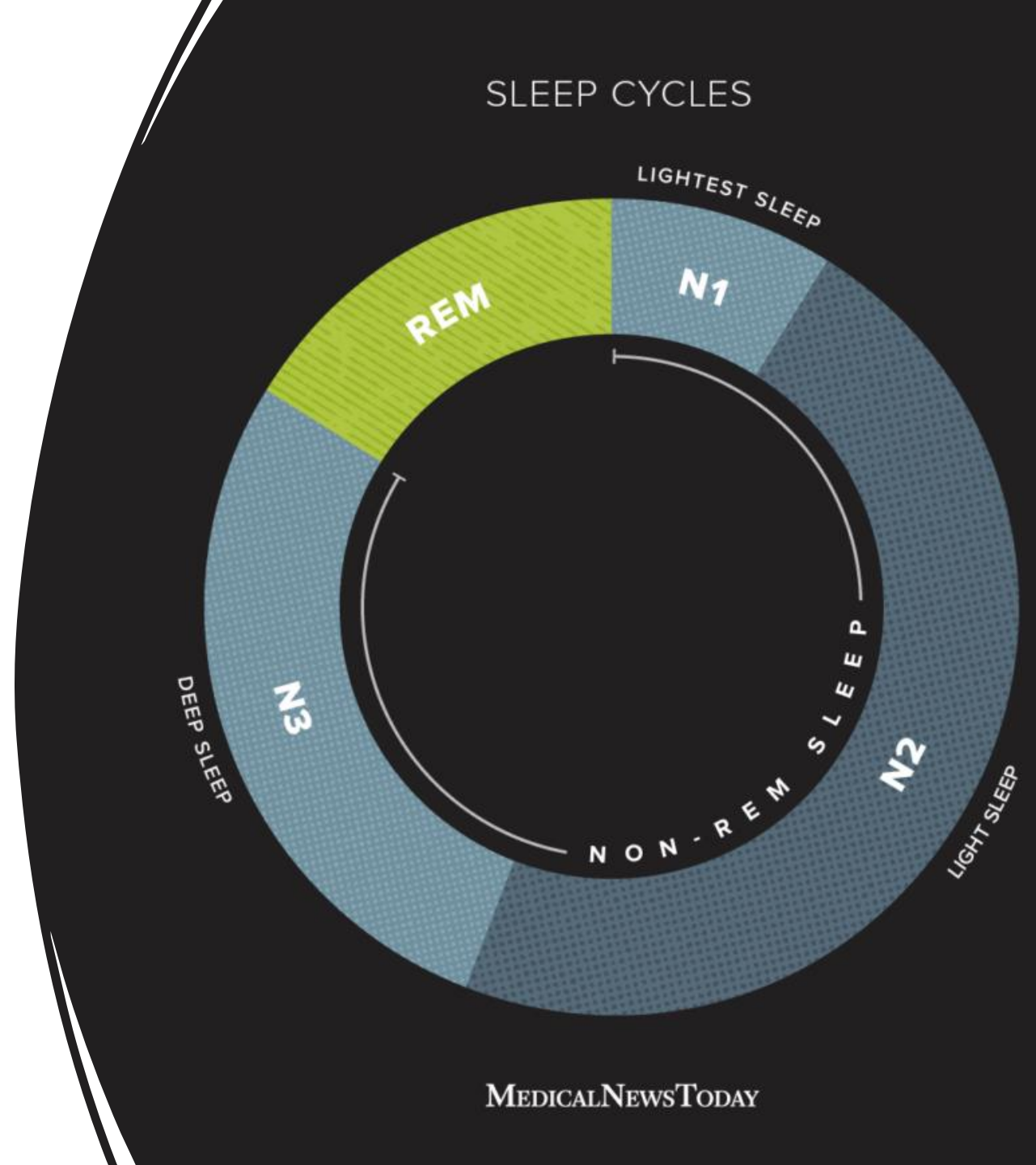
Myocardial Infarction (Sivertsen et al. J Sleep Res 2014; 23:124-32)

Motor Vehicle Crashes (Leger D et al. Sleep 2006;29:171-8)

Absenteeism (Especially blue collar) (Leger D et al. Sleep 2006; 29:171-8)

Sleep Cycles

- N1 ~ 10%
- N2 ~ 55%
- N3 ~ 15%
- REM ~ 20%



NREM + REM



NREM – Stages 1, 2, 3 “Deep Sleep.” ATP restoration. Memory encoding. Information consolidation. Cardiovascular system cycles down, Immune response improves.

REM – “active” sleep. Dreaming. Information integration. Emotional easing.

Adenosine & Melatonin

Daylight hours – Adenosine builds, creating sleep pressure.

- Reminder: Caffeine is an Adenosine receptor antagonist.

Nighttime – Melatonin tells our bodies it's time to sleep.

- Absolute concentrations decrease as we age. Dosed and used poorly often by patients.

Mythbusting – I can drink coffee and sleep no problem.

- Sleep initiation may not be affected, sleep maintenance & sleep architecture often are.

Mythbusting



8 hours of sleep



Don't nap



We sleep less because
of screens

Insomnia / Melatonin

- Light and melatonin affect the circadian clock
- Melatonin: Start low, 30 mins before bedtime. Increase by an additional 30 mins before bedtime if not effective. Low doses (0.5-1 mg)
 - Helpful when there's a longer circadian rhythm, i.e. 25 hours
- Light: In the AM for night owls, HS for early birds
 - 10,000 Lux; at least 30 minutes.
- Clinical Pearl: Some Beta Blockers reduce melatonin (propranolol/atenolol do, Carvedilol no effect)

Sleep in Athletes



Athletes get less total sleep than non-athletes

Sleep deprivation effects:
decreased running performance,
reduced submaximal strength,
distance covered, sprint times,
tennis serve accuracy, soccer
kicking skills, time to exhaustion.

Cognitive effects: decreased
psychomotor functions, mood,
vigor (subjective feeling of energy
and enthusiasm), increased
reaction time and confusion.



Even if an athlete cannot
get an adequate night's
sleep, a nap the following
day may be beneficial.



“Banking sleep” (intentional sleep
extension prior to a night of sleep
deprivation) in a pilot study did
improve motor performance.

CBT-i

First line recommended treatment by the American College of Physicians

Meta-analysis of RCTs compared CBT-I to control CBT-I had moderate to large effects on:

- Time to fall asleep
- Total time awake at night
- Wake time after falling asleep
- Time in bed
- Early morning awakenings
- Proportion of time in bed asleep (sleep efficiency)

Longer lasting effects than medications

CBT-I in Action

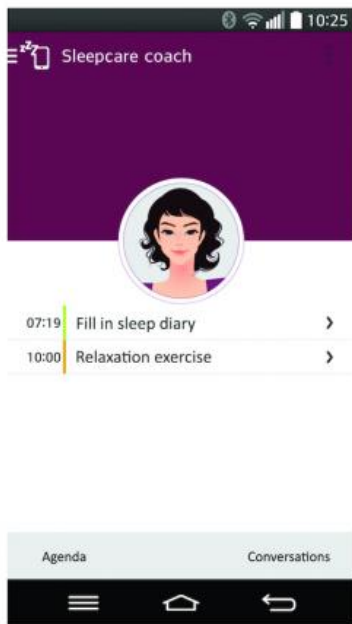
Assessment

- Sleep diaries
- Clinical interview

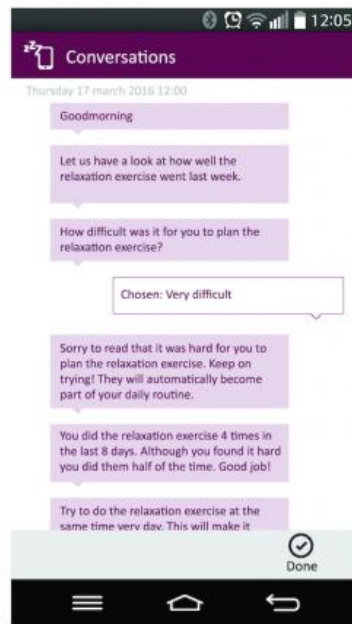
Sleep education

Sleep scheduling/sleep restriction

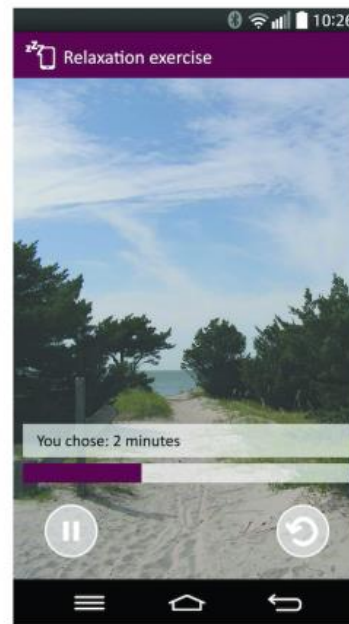
Additional cognitive/behavioral treatments as appropriate



Home screen with the scheduled exercises for the day



Conversation between app and participant



Relaxation exercise screen (including voice track)



Filling in the sleep diary



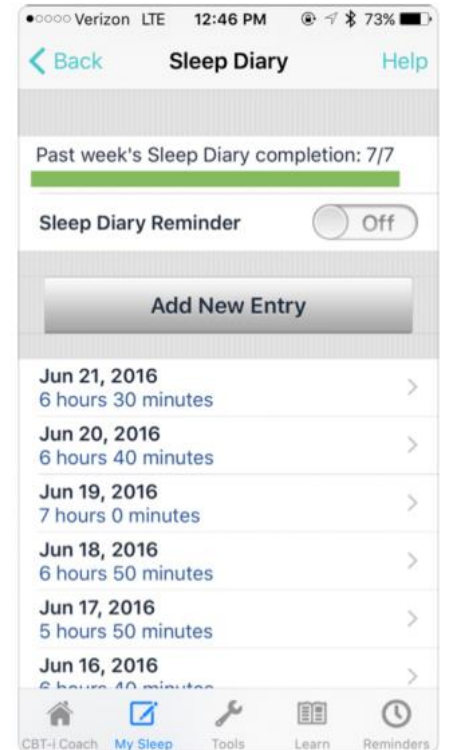
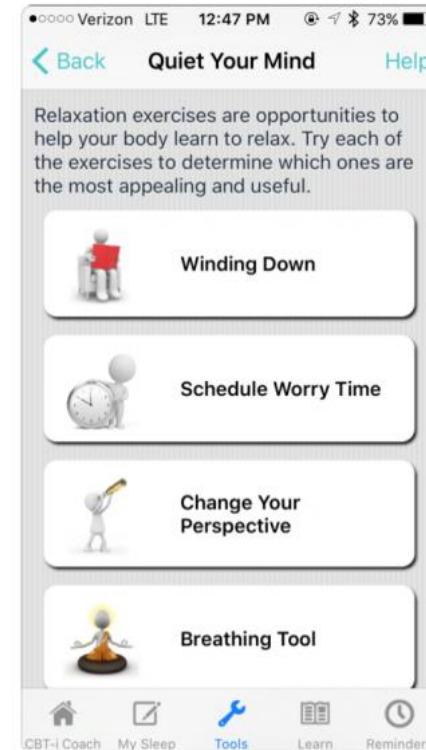
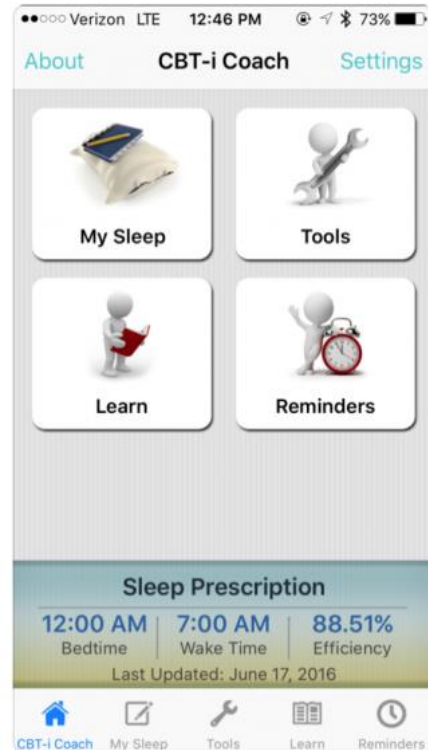
Overview of the sleep diary



Overview of the sleep efficiency

CBT-I Apps

- SHUTi (paid)
- Sleepio (paid)
- VA CBT-I Coach App (free to all)



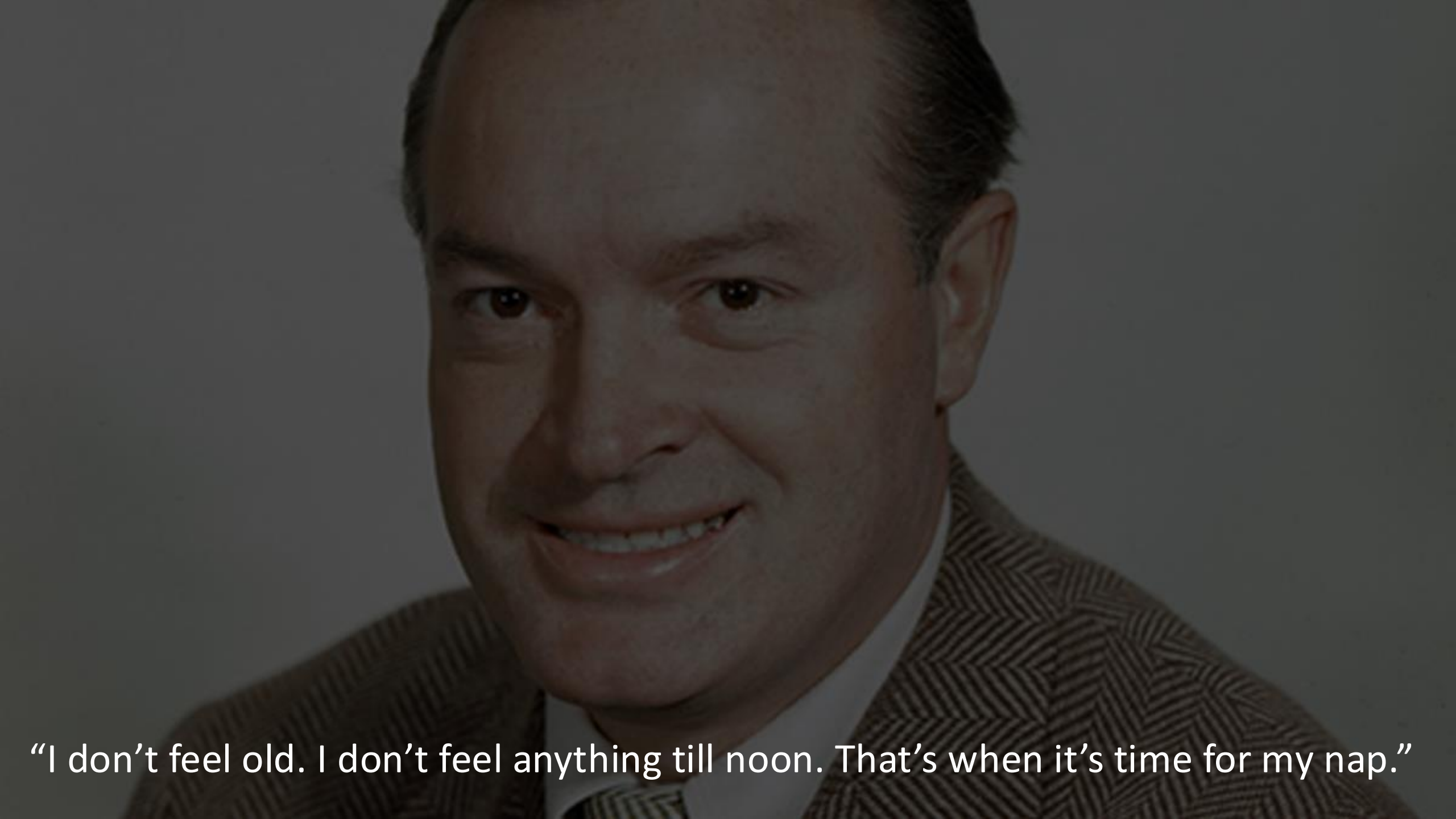
Sleep for the Athletic Patient

GH release

Naps can be beneficial when done
right

College kids – “all nighters”

- Essays > Exams
- Performance decrease
- Injury risk increase
- Poor eating patterns



“I don’t feel old. I don’t feel anything till noon. That’s when it’s time for my nap.”

Tips for
Parents

Nightlights

Sleep
routines

Psychiatric Aspects of Sleep

Positive relationship with Bedtime

- Athletes – LeBron James/CALM app, Tom Brady/TB12

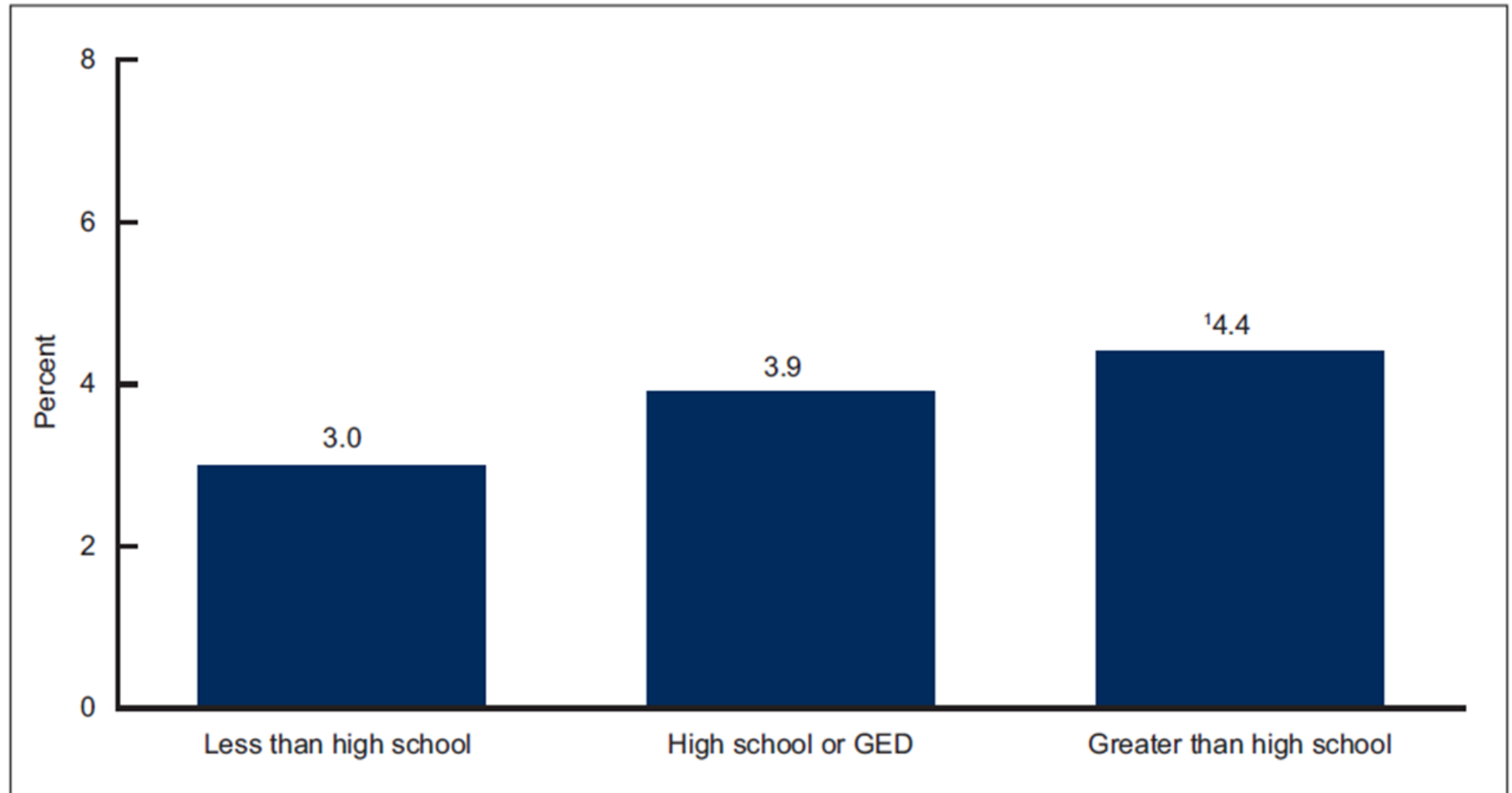
Stress about sleeping → Cortisol

How to feel when you do have insomnia

Medications → Short term benefits; Medium term for Depression/Anxiety/PTSD; Long term no sustained benefits in majority.

Insomnia in Higher Education

Figure 3. Age-adjusted percentage of adults aged 20 and over who used prescription sleep aids in the past 30 days, by education: United States, 2005–2010



NFL + Sleep

East Coast NFL teams vs West Coast NFL teams

- For afternoon games, no difference in outcome (athletes performed similarly in a 1 p.m. vs. 4 p.m. game regardless of location).
- For evening games, East Coast teams consistently performed poorly on the West Coast (and did not beat the point spread)

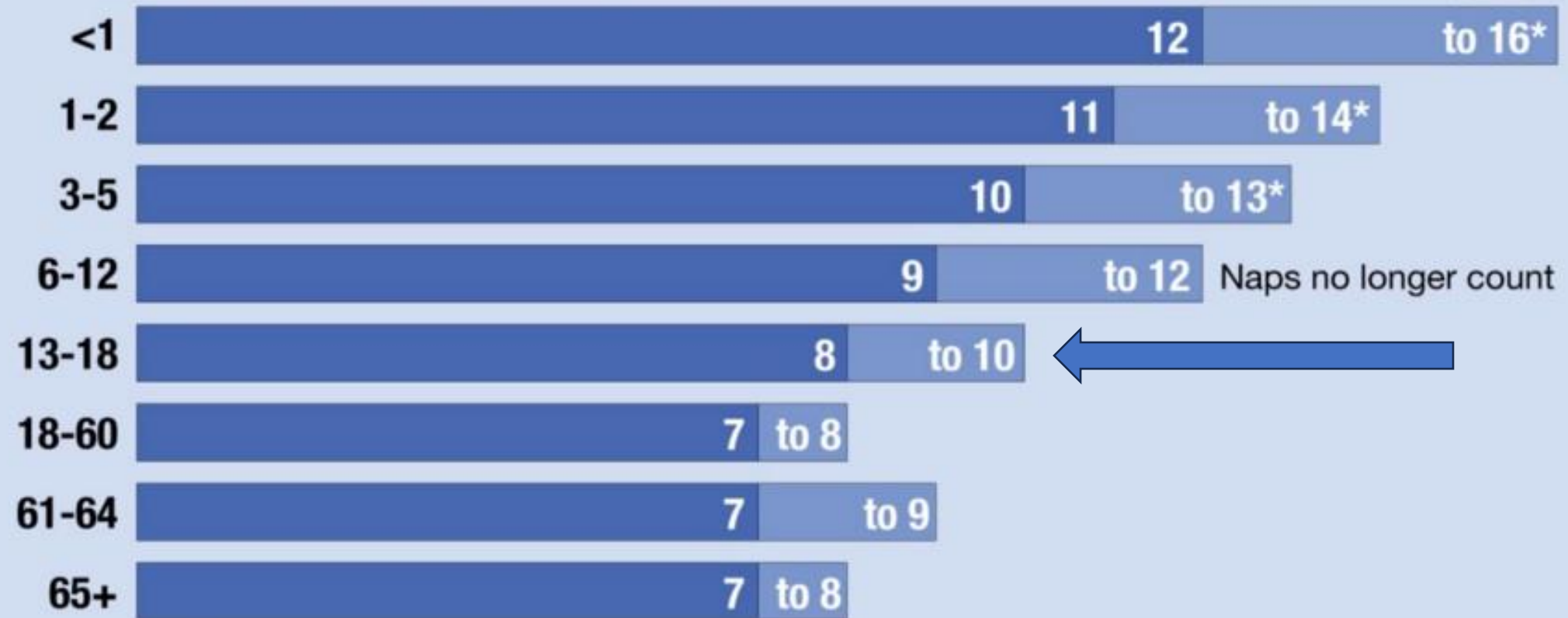
Exercise is a nonphotic stimuli that can cause a “phase shift”

- 1hr of evening exercise elicited a 30 min later phase shift in peak melatonin

How Much Sleep Do You Need?

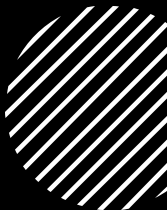
Recommended hours of sleep, based on age:

*Including naps



SOURCE: CDC/NIH

GRAPHIC BY ROBERT ROY BRITT



CO2 levels

CO2 levels in the bedroom are most important.

If you can monitor it, keep below 900 ppm

Higher levels lead to sympathetic NS activation

This will cause sleep architecture changes, next day fatigue/cognitive dulling

Solve by opening windows / Cross draft best

Co-sleeping with pets increases CO2

Bathroom vent fan



Sleep Tips



Decrease alcohol close to bedtime



Pets sleep off the bed or in another room



Limit food to 2-3 hours before bedtime



Limit Exercise before bedtime



Lower room temp close to 68 degrees; Cotton blanket > down comforter. Wear socks if needed.



Reduce ambient light 90 minutes before bedtime



Sleep and wake at the same time as often as possible.

Treatment

- Supplements – Magnesium Glycinate (especially helpful for restless sleep), Melatonin (lower dose can be longer term, higher dose OK for short term)
- PRN medications – Atarax (tablet form), Trazodone (priapism warning), Unisom
- Sedating Antidepressants – Remeron (helpful, can replace another antidepressant in patient's regimen, watch for increased appetite)
- Benzos – short term use, Temazepam a good choice.
- Seroquel, Doxepin (more specific to H1 receptor) – hopefully shorter term use. Can be very helpful in low dosages without many side effects.

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