



HEALTHY SLEEP THROUGHOUT OUR LIVES

Presented by Kyle Davis, PhD

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Sponsored by St. Luke's Center for Community Health

PRESENTER BIO: KYLE DAVIS, PHD

2006: BS from Oklahoma State University

2008: MS from University of Colorado, Boulder

2012: Clinical Internship at UCSD Department of
Psychiatry

2013: PhD in Clinical Psychology from University of
Colorado, Boulder

2016: Started Insomnia clinic at St. Luke's

2019: Joined St. Luke's Lifestyle Medicine team

2021: Launched Confluence Health Psychology PLLC

2024: Transition to full-time private practice





AGENDA

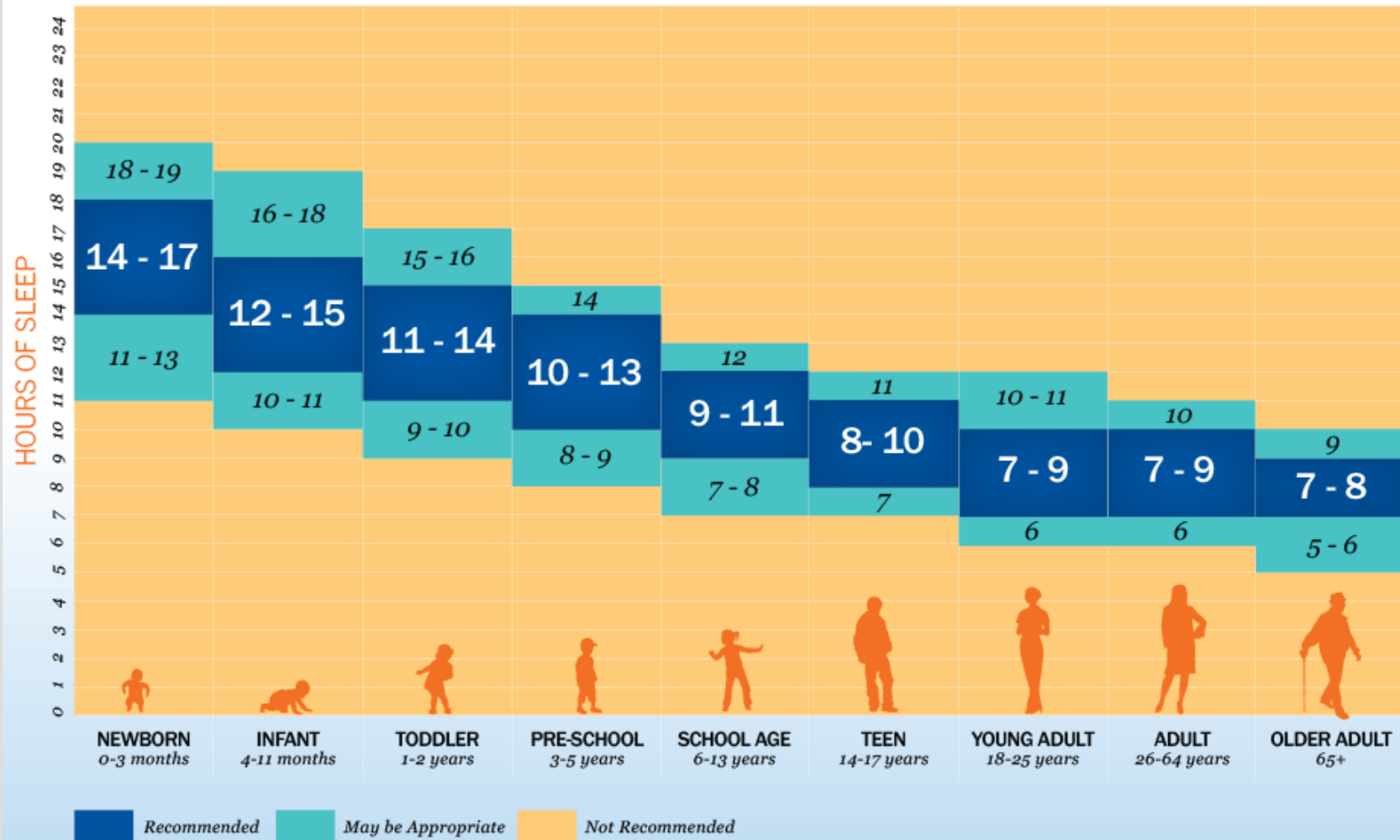
- Overview of healthy sleep across lifespan
- Relationship between sleep, health, and performance
- How to improve your sleep
- Sleep disorders and when to seek help

WHAT IS SLEEP AND WHY DO WE NEED IT?

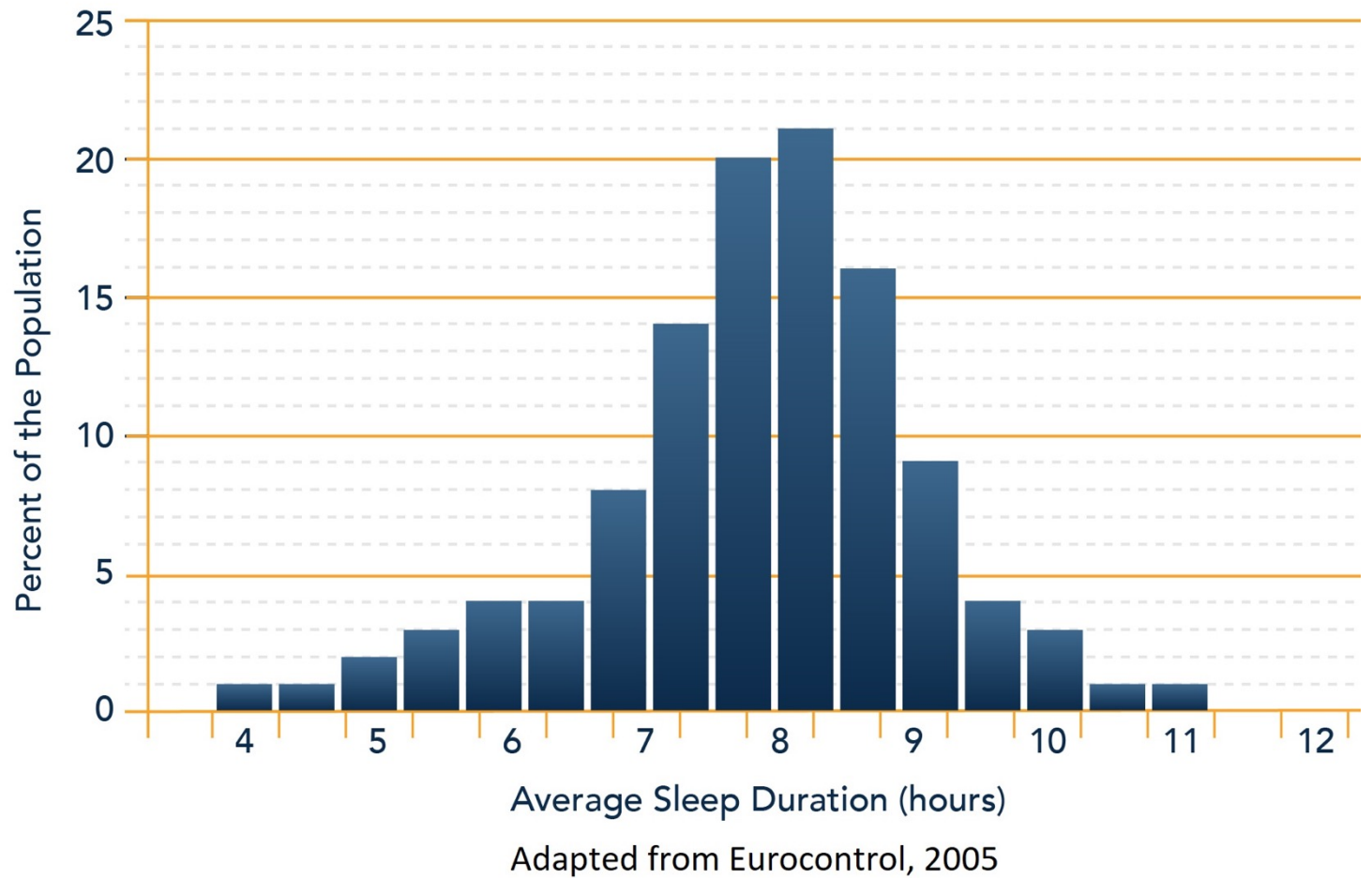
Sleep can be characterized as discrete periods of non-wakefulness with distinct patterns of brain activity and physiological functions. While we remain unsure of all the reasons why humans need sleep, it is widely agreed upon that sleep serves to: preserve and restore energy, help the nervous system recuperate from wakeful activity, promote brain plasticity, consolidate memories, and regulate emotions.



SLEEP DURATION ACROSS THE LIFESPAN



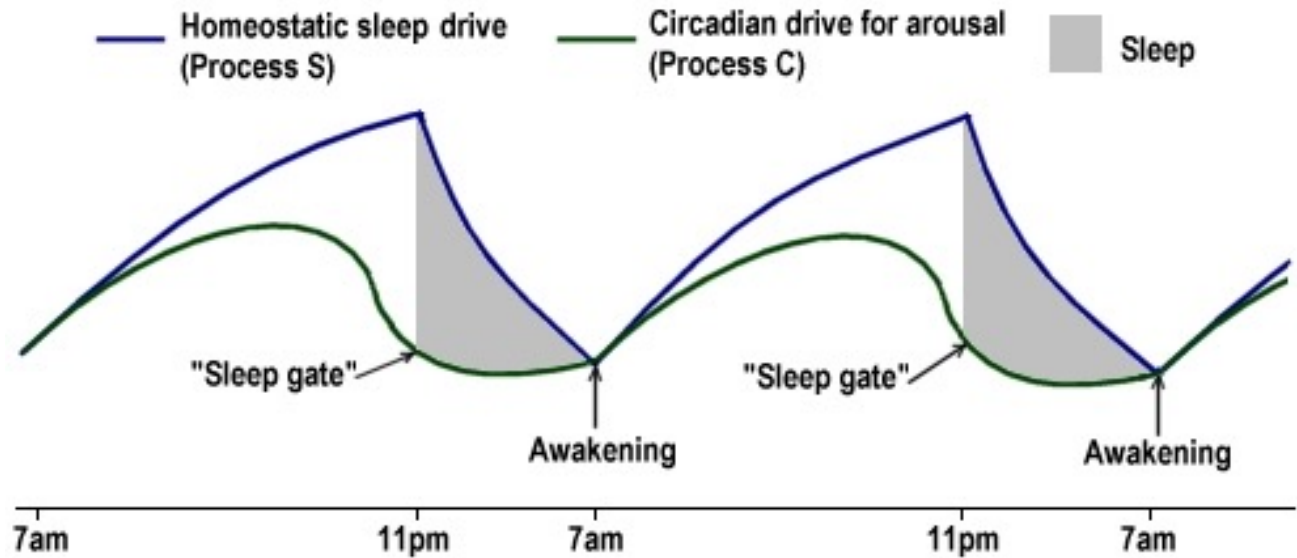
HOW MUCH SLEEP DO YOU NEED?



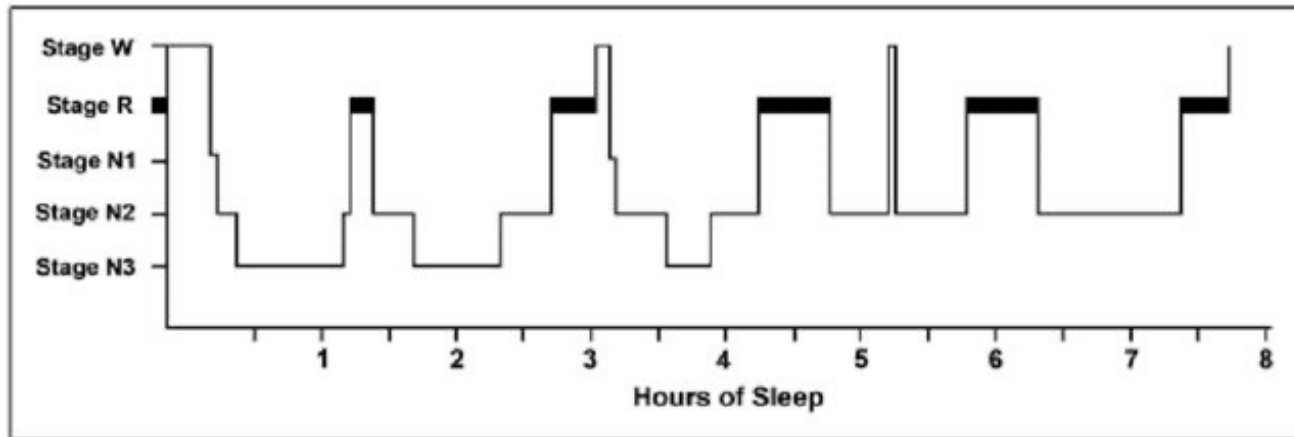
HEALTHY SLEEP: PROCESS C AND PROCESS S

Process C refers to circadian rhythm and influences biological processes like sleep, hunger, alertness, and body temperature.

Process S refers to your body's physiological drive for sleep. Sleep drive (or sleep debt) increases in proportion to how long you have been awake, just like your appetite increases the longer you go without eating. The more sleep debt you have, the easier it is to fall and stay asleep.

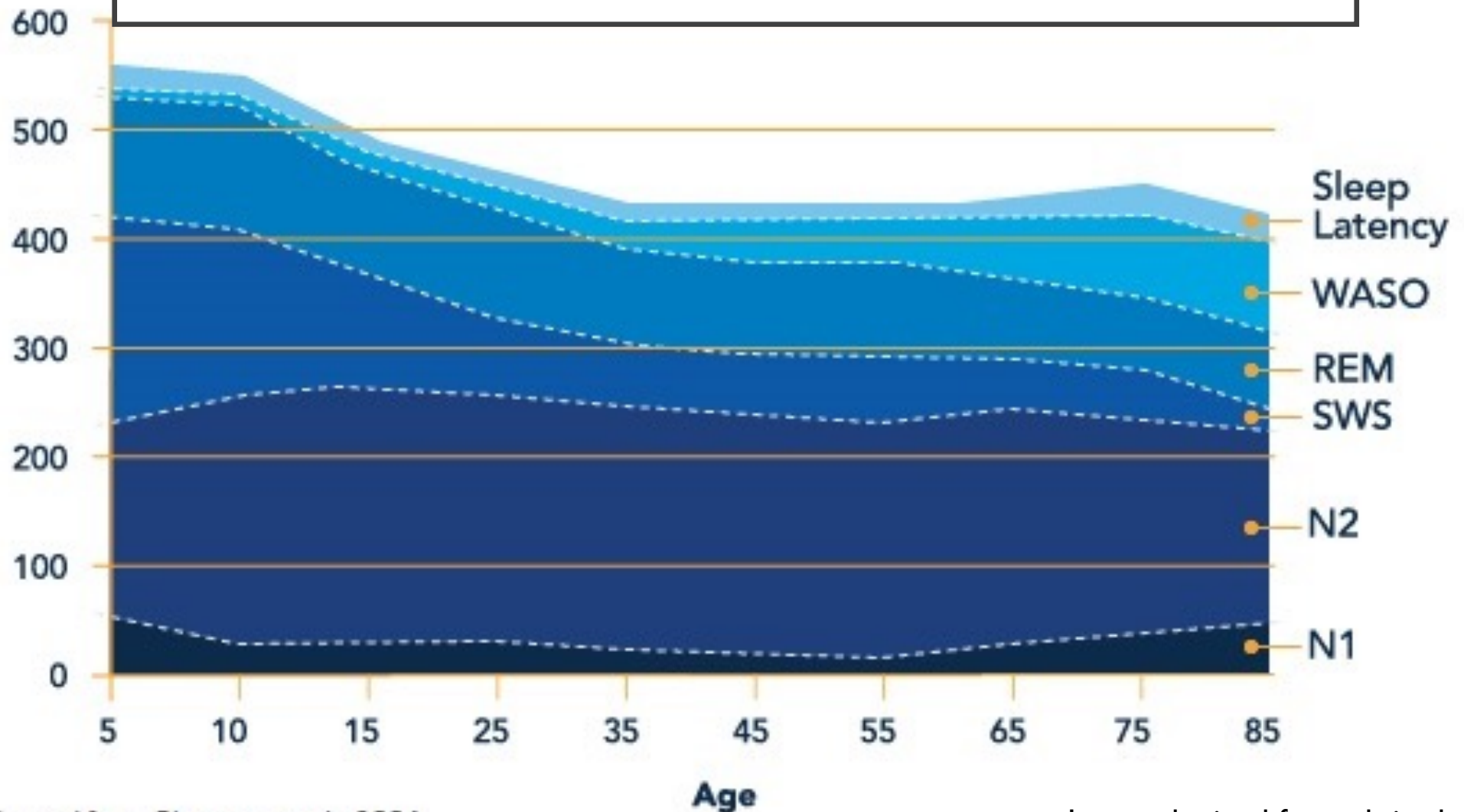


HEALTHY SLEEP: SLEEP ARCHITECTURE



- Sleep is organized into both Non-REM and REM sleep
- Non-REM sleep contains 3 stages with stages N1 and N2 being lighter sleep and N3 defined as deep sleep
- REM occurs at the end of sleep cycles and is characterized by eye movements and atonia (paralysis)
- We think each stage of sleep serves a unique function

CHANGES IN SLEEP ARCHITECTURE ACROSS THE LIFESPAN



Adapted from Ohayon, et. al., 2004

Image obtained from cbtiweb.org



WHY WOULD SLEEP BE ESPECIALLY IMPORTANT FOR ADOLESCENTS?

RELATIONSHIP BETWEEN SLEEP AND MENTAL HEALTH IN ADOLESCENTS

Risk Factors

- Later weeknight bedtime
- Shorter weeknight sleep duration
- Greater weekend bedtime delay
- Short and long periods of weekend oversleep

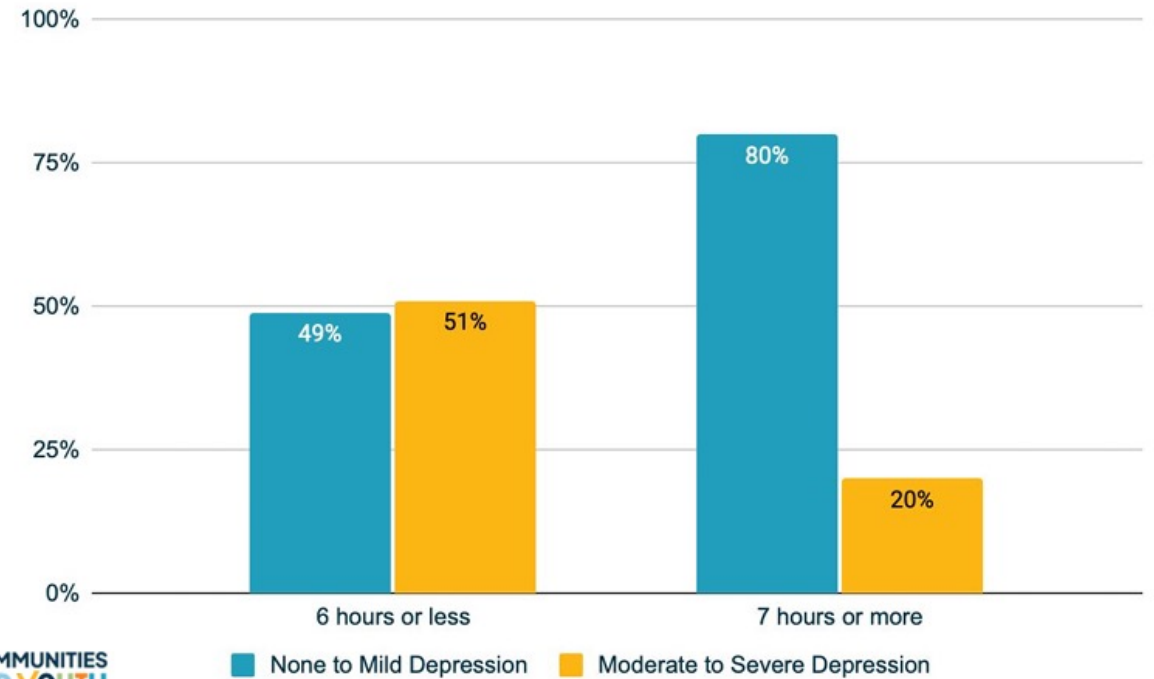
Outcomes

Increased odds of:

- Symptoms of depression
- Symptoms of anxiety
- Substance use disorders
- Behavioral disorders
- Suicidality
- Tobacco use
- Poor perceived physical and mental health

Boise State University's Communities for Youth Assessment in Blaine County School District in 2023

Students Reporting Depression by Duration of Sleep



A photograph of several students sitting at a long wooden table in a bright, modern classroom or library. They are focused on their work, with laptops and books open. Large windows in the background let in natural light, creating a bright and airy atmosphere. The students are dressed in casual attire, and the overall scene conveys a sense of academic diligence and collaboration.

RELATIONSHIP BETWEEN SLEEP AND ACADEMIC PERFORMANCE


How has sleep affected your academic performance?

- Strong relationship between sleep, memory, and cognitive performance
- Sleep deprivation can mimic the effects of alcohol intoxication on cognitive performance
- Greater sleep quality, duration and consistency are associated with improved academic performance (Okano et al., 2019)
- Sleep accounted for appx 25% of variance in academic performance (Okano et al., 2019)
- Consistent vs. irregular sleepers have higher GPA's despite similar sleep durations (Phillips et al., 2017)

- Sleep affects our ability to learn, memorize, retain, recall, and use new knowledge to solve problems creatively
- When we learn new information, that information is temporarily stored in the hippocampus. You can think of your hippocampus like a USB memory stick. When we sleep, that information is transferred to a long-term storage region in your brain, the cortex.
 - Learning new information is correlated with increased sleep spindles during stage 2 sleep
- Your brain decides what is important and what is not so it can selectively transfer information to long-term memory storage



HOW DOES SLEEP AFFECT ACADEMIC PERFORMANCE?



RELATIONSHIP BETWEEN SLEEP AND
ATHLETIC PERFORMANCE IN COLLEGE
STUDENTS

How has sleep affected your athletic performance?

Poor quality and/or quantity of sleep have been associated with:

- Inhibited athletic ability (slower sprint times)
- Decreased accuracy
- Quicker exhaustion
- Decreased reaction time
- Decreased aerobic output
- Decreased limb extension force
- Decreased vertical jump height
- Decreased peak and sustained muscle strength
- Increased lactic acid build up
- Decreased blood oxygen saturation
- Risk for injury
- Risk for illness or immunosuppression



HOW DOES SLEEP AFFECT ATHLETIC PERFORMANCE?

- Motor skill memory
- What kind of complex motor skills do you work on?
 - Practice makes perfect? Practice, followed by sleep, makes perfect!
 - Increases in speed and accuracy are directly related to the amount of Stage 2 NREM sleep, especially in the last 2 hours of an eight-hour night of sleep. There are observable sleep spindles in the motor cortex during sleep when learning new motor skills.



HOW DOES SLEEP AFFECT ATHLETIC PERFORMANCE?

- Post-performance or training sleep helps accelerate recovery from common inflammation, stimulates muscle repair, and helps restock cellular energy in the form of glucose and glycogen
- During Stage 3 sleep, growth hormone and androgens are released and facilitate muscle repair, muscle building, bone growth, and the oxidation of fat

STRATEGIES TO IMPROVE SLEEP: FIND THE RIGHT SLEEP SCHEDULE



Set a sleep schedule for yourself that's a good fit for your sleep ability



Most people do best with a sleep opportunity about 30-60 minutes greater than sleep ability



Get up at the same time every day regardless of how well you sleep



Only go to bed when you feel sleepy at night



Avoid napping/dozing to maximize your sleep debt if trying to sleep more soundly at night



STRATEGIES TO IMPROVE SLEEP: STIMULUS CONTROL

Do nothing in bed but sleep* AND sleep nowhere but the bed

*and sex



STRATEGIES TO IMPROVE SLEEP: THINGS TO AVOID

- Do not *try* to fall asleep
- Avoid caffeine after noon
 - Watch out for energy and pre-workout drinks
- Avoid nicotine within 2 hours of bedtime (or completely!)
- Avoid alcohol near bedtime
- Do not go to bed hungry or too full
- Avoid excessive liquids in the evening
- Do not watch the clock
- Avoid overtraining
- Avoid training and competitions too early or too late

STRATEGIES TO IMPROVE SLEEP: PROMOTING GOOD SLEEP

- Use a bedtime ritual
- Help your body get to the right temperature for sleep (60-67 °F)
- Make sure your bedroom is a comfortable temperature
- Make sure your bedroom is comfortable and free from light and noise
- Physical activity 4 hours or earlier before bedtime
- Consider using a fan, sound machine, for background noise or you can use earplugs
- If light bothers you, try using an eye mask and/or blackout curtains
- Try to maintain a consistent sleep schedule



STRATEGIES TO OPTIMIZE SLEEP PERFORMANCE: WIND DOWN ROUTINE

- Some people expect to be able to work or engage in other kinds of stimulating activity right up until the time they want to fall asleep
- Your brain likely needs more time to relax and slow down before it will be able to sleep, otherwise it will just take the time to slow down while you're in bed
- Try giving yourself at least 30-60 minutes of wind down time before trying to sleep
- Watch out for electronics before bed-blue light emitted from screens can affect your circadian rhythm
- What can you do to wind down?





STRATEGIES TO OPTIMIZE SLEEP
PERFORMANCE: WAKING UP ROUTINE

Having a consistent routine to wake in the morning can be just as important as having a wind down routine

Try the RISE-UP method to make your mornings more consistent:

Refrain from snoozing

Increase activity

Shower or wash face and hands

Extra sunlight

Upbeat music

Phone or talk to a friend or loved one

SLEEP CONSIDERATIONS FOR STUDENT-ATHLETES

- Student-athletes may need more sleep than their student counterparts (8-10 hrs) vs (7-9 hrs)
- Napping may be beneficial for student-athletes not having problems with sleep at night-time
- Obtaining improved sleep can occur when you put yourself in the right situation for improved sleep, NOT by trying harder to sleep
- Watch out for substances like alcohol and caffeine that can disrupt quality and quantity of sleep





SLEEP DISORDERS

- There are many disorders that can directly affect the quality of your sleep
- Insomnia, Sleep Apnea, and Restless Leg Syndrome are some of the most common sleep disorders
- To obtain the best possible sleep, these disorders need to be well-managed

DSM-V DEFINITION OF INSOMNIA

“Dissatisfaction with sleep quality or quantity characterized by difficulty initiating sleep, maintaining sleep, or early morning awakenings that cause significant distress or impairment in daytime functioning and occur at least three nights per week for at least 3 months despite adequate opportunity for sleep.”



OBSTRUCTIVE SLEEP APNEA



Obstructive sleep apnea is a sleep disorder in which breathing is briefly and repeatedly interrupted during sleep. The "apnea" in sleep apnea refers to a breathing pause that lasts at least ten seconds. Obstructive sleep apnea occurs when the muscles in the back of the throat fail to keep the airway open, despite efforts to breathe.

RESTLESS LEG SYNDROME

Characterized by a desire to move the limbs (usually legs) and feelings of restlessness or unpleasantness (itchy crawly feelings)

Usually occurs in the evening hours and need to be relieved by movement such as walking, tapping, or stretching



COMMON SLEEP DISORDERS: WHEN SHOULD YOU SEEK HELP?

- Problems with sleep are beginning to or have been causing significant impairment in daytime functioning
 - Academic functioning
 - Occupational functioning
 - Athletic performance
 - Interpersonal relationships
 - You consistently think about sleep and how lack of sleep could affect you
 - Sleep is affecting your mental health
- You appear to be sleeping enough but consistently feel sleepy during the daytime

NEED HELP WITH SLEEP?

Reach out to your health care provider and/or me for
further assessment and treatment options
If you have any questions, feel free to reach out!

Contact info:

KYLEDAVISPHD@GMAIL.COM

208-576-6279

WWW.KYLEDAVISPHD.COM

