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Don’t Overlook the Value of Sleep

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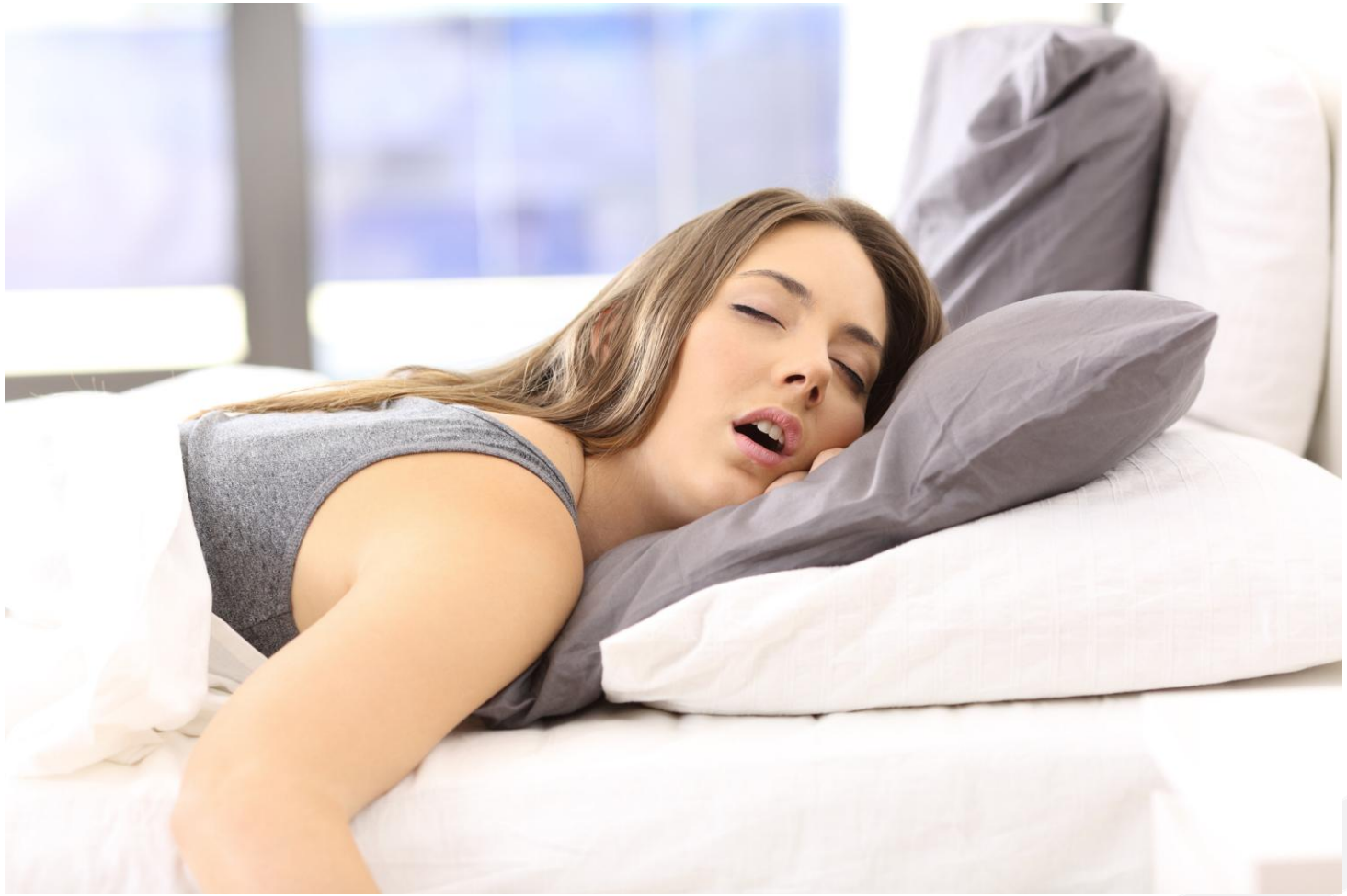
I have no disclosures

Why is sleep important?

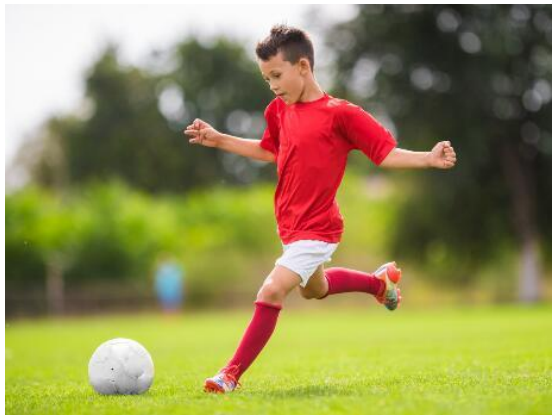


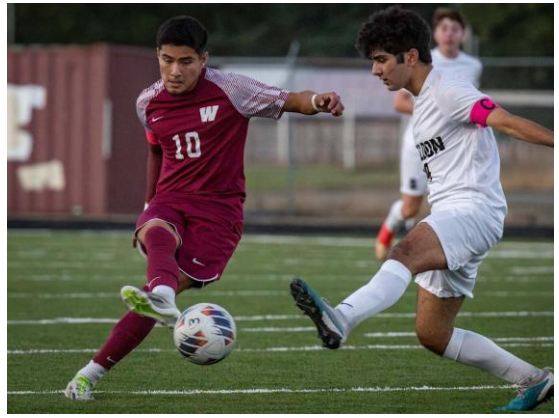
Sleep

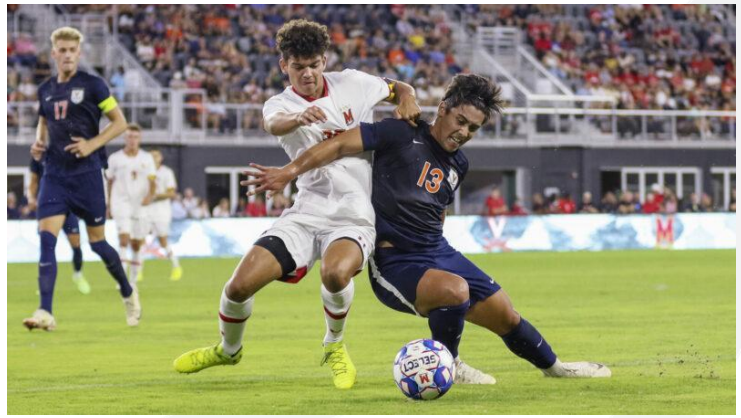
- Increased awareness over the past decade and its importance
- Essential human behavior
  - Key role in proper development (social, occupational, and academic)
  - Short and long term biological, physical, psychological and cognitive health of athletes
  - Athletic performance, training, recovery, risk of injury, mental health, and overall wellness

Sleep through the years

1. Sleep health has a direct correlation to mental health
2. School Schedule (Grades 6-12)
    1. US start earlier w/ each academic level – results 90 cumulative loss minutes of sleep per evening
    2. Adolescent athletes < 8 hrs. per night were 1.7 X more likely to have an injury compared to athletes who slept 8 hrs or more

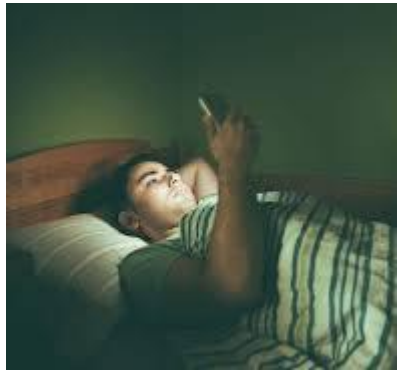






Obstacles: (To a good night's sleep)

- Training
- Competition schedules
- Travel
- Stress
- Social media
- Academic demands
- Overtraining



Sleep Disturbances: Multiple Reasons

1. Regular training periods
    1. Poor sleep hygiene – late games or training sessions (late or earlier)
    2. Increase & late caffeine intake
    3. Chronic sleep complaints (insomnia, sleep apnea, etc)
    4. Response to heavy training workloads
2. Temporary sleep disturbances
    1. Unusual sleep routines – (travel, jet-lag, hotel/bed noise)
    2. Pre-competition anxiety

* Both of these will cause implications for performance and recovery

International Olympic Committee (IOC)
National Collegiate Athletics Association (NCAA)

- 2019 – Included sleep health -> published mental health best practices (Reardon, et al) (Kroshus et al)
- Increased awareness and importance of sleep health
- Sleep sufficiency (at least 7 hours for adults)
- Proper circadian alignment
- Good overall sleep quality

NCAA® Recommendations:

1. Conduct a collegiate athlete time demands survey annually
2. Ensure consumer sleep technology, if used, is compliant with HIPAA & FERPA laws
3. Incorporate sleep screening into pre-participation exam
4. Provide athletes with evidence-based sleep education:
    1. Information on sleep best practices
    2. Information about the role of sleep in optimizing athletic and academic performance and overall well-being
    3. Strategies for addressing sleep barriers
5. Provide coaches with evidence-based sleep education:
    1. Information on sleep best practices
    2. Information about the role of sleep in optimizing athletic and academic performance and overall well-being
    3. Strategies to help optimize collegiate athlete sleep

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Mah, et al (2011)

- Collegiate basketball players – Stanford University
- Compared a 2-4 week habitual sleep-wake schedule with a subsequent 5-7 week extension phase
- Encouraged to sleep as much as possible – spend a min 10 hours in bed each night
- ***Results:***
  - Sleep duration increased 6.6-8.4h
  - Reduction in daytime sleepiness
  - Improved sprint times, free throw and 3-point accuracy by 9%
  - Increased reaction time, improved mood state

Chronotypes

- General population: (Fisher & colleagues 2017)
  - 25% Morning Type
  - 50% Intermediate Types
  - 25% Evening Types

- Athletic Population: (Samuels 2008; Silva & colleagues 2012)
  - 51% Morning Types
  - 40% Intermediate Types
  - 9% Evening Types
- * Something to consider when scheduling practices, games, or picking a sport

Questionnaires:

- Athlete Sleep Screening Questionnaire (ASSQ)
  - Questions related to an athletes sleep habits
- Pittsburgh Sleep Questionnaire Index (PSQI)
  - Widely used to assess sleep quality of the past month
- Epworth Sleepiness Scale (ESS)
  - Measures daytime sleepiness assessing likelihood of falling asleep in various situations
- Sleep Condition Indicator (SCI)
  - An eight-item questionnaire used to screen for insomnia disorder

Training

- Year round calendar and competition schedule
- Maximize the benefit from training -> peak effort, endurance and performance
- Peacock, et al (2018)
  - Mixed martial arts, 6 week period
  - Greater sleep quality and regularity associated fewer missed practices – due to reductions in fatigue, illness and injuries
  - Reduced sleep latency -> Improved physical performance over the 6 week period
- Teece, colleagues (2021)
  - Negative effects of short sleep duration on aerobic capacity of professional rugby players

Competitive & performance outcomes

- Stavrou (2021)
  - Professional soccer players worse sleep quality Pittsburgh Sleep Quality Index: (PSQI) = worse reaction time
  - Reduced oxygen capacity
- Sargent (2022)
  - Top 3 finishers in Australian professional road cycling race
  - Obtained significantly more sleep during 5 day competition than the bottom 3 finishers
- * Better sleep prior to and during competition = Better performance out comes

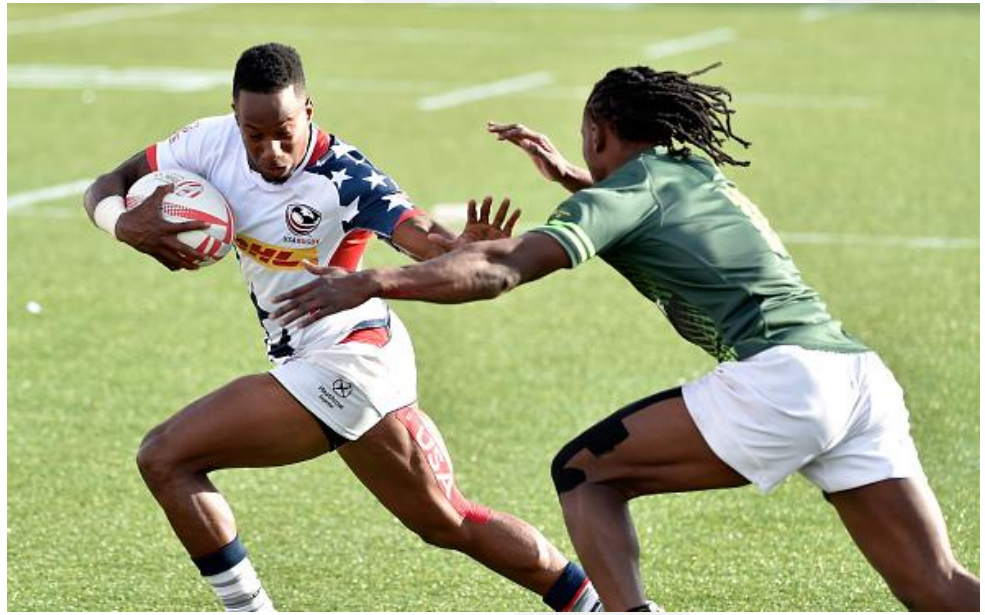
Physical Injury: Prevention and Recovery

- Sleep
  - Key role athlete's risk for developing an injury
  - Ability to recover from an injury effectively and efficiently
- Concussion Injuries
  - Primary risk factors sport related concussions
  - Concussion severity
  - Recovery timeline
  - Overall treatment outcomes
- * Sleep is a key factor in prevention and recovery there is limited empirical data in the current literature

Mental Health

- 1/3 of elite athletes (professional or Olympic) experience mental health problems – anxiety and depression
- Athletes: vulnerable population
  - Worry over performance outcomes
  - Psychological distress – external pressures
    - Teammates, coaches, social media outlets
  - Mental fatigue and burnout – constant training and travel
  - Degraded self-esteem from the culture of the sport
- Sleep Problems -> Existing mental health problem -> underlying sleep disorders
- Sleep and mental health often present concurrently
- Importance of seeking a referral to a Sleep Professional / Specialist

Mental Health Research



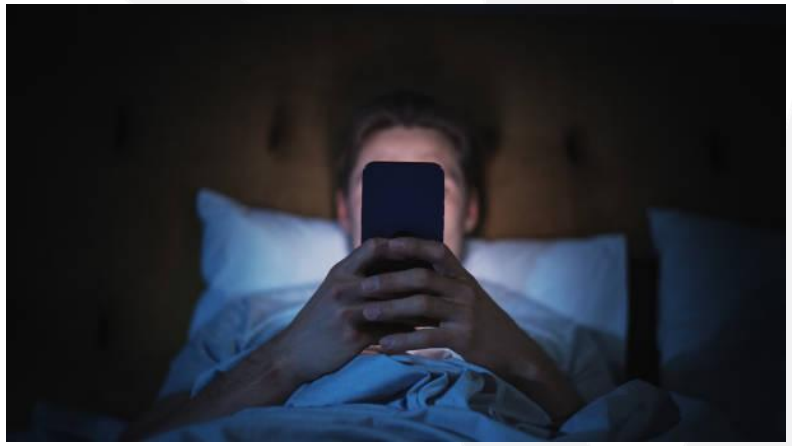
Gouttebarge (2018)

- Mental health problems – Professional Rugby players
- 12-month period
  - Anxiety / Depression – 28%
  - Adverse alcohol use – 22%
  - Eating disorders – 22%
  - Sleep disturbances – 11%
  - General psychological distress – 11%
- 19% reported having 2 or more symptoms concurrently

Facer-Childs & colleagues (2019)

- Australian Football League Athletes
  - 31%-51% variance of depression, anxiety, and stress symptoms due to role that sleep health played measured by various sleep monitoring

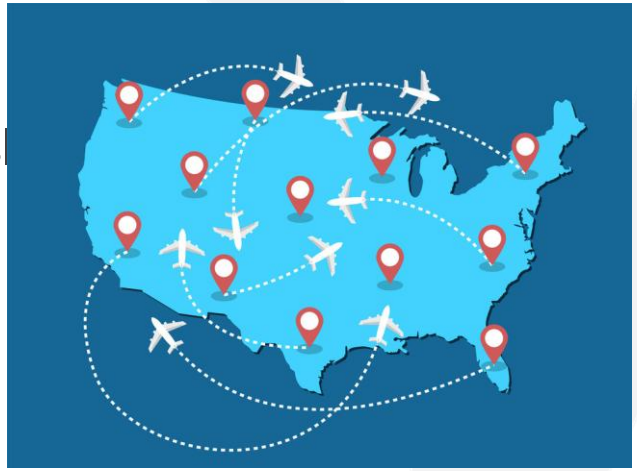
Late night “Tweeting”



Jones (2019)

- 112 professional NBA players
- Late night tweeting – associated with acute sleep restrictions
- Night before a game
  - Fewer points scored and rebounds
  - Less playing time -> Reduced endurance
  - Shooting accuracy significantly decreased
- * Detrimental effects of acute sleep restriction on NBA player performance

Travel and Time Zone Changes



- Circadian rhythm disruption (regulates times of alertness & s
- Travel across multiple time zones
- Travel fatigue
- Irregular sleeping behavior

Roy & Forest (2018) (NBA, NHL, NFL – 2010-2015)

- Effects of time zone change on the team
- Direction of travel and game time
- Traveling westward but not eastward = worse winning % for NBA and NHL

- Some reported no difference in winning percentages.
- * Time zone change in either direction = negatively influences competitive performance -> degraded sleep health

Variables to consider

- Sleep diary / journal
- Sleep wearables: numerous options
- Sleep quality
  - How long did they sleep
  - Sleep onset Latency
  - Night time awakenings
- Sleep efficiency

Sleep Wearables

- Oura Ring
- Apple Watch
- Garmin Forerunner
- Polar Vantage
- Whoop
- Somfit
- Actigraphy - Wrist
- * Pick a couple parameters to monitor – Quality of sleep / total sleep / sleep latency / REM / deep sleep
- * Relying solely on wearable technology for monitoring and evaluating an athlete's sleep should not be the only tool







Conclusions: Sleep

- Essential component of health and well being
- Impacts physical development and recover
- Emotional regulation
- Cognitive performance
- Quality of life
- Improved athletic performance and competitive success
- Reduces athletic injuries
- More research is still needed

Recommendations: Sleep Hygiene

- Sleep Health Education (4 consecutive classes – 1 hour in length to all athletes, coaches and staff)
- Have a consistent pre-sleep routine
- Consistent bed and wake times
- Total sleep time:
  - Youth: 9-10 hours, Adolescents: 8-10 hours, Collegiate: minimum of 7- 9 hours (may require 9-10 hrs)
- Bedroom dark, quiet, and cool (provide earplugs and eye masks)
- Avoid technology use & screen time to 60-90 minutes prior to bed “digital curfew”
- Avoid reading, studying, or watching TV while in bed
- Limit caffeine to mornings and early afternoon
- Do not go to bed hungry or after a large meal
- Bright, full spectrum light upon awakening – reset circadian rhythm
- * Not a one size fits all approach for athletes – Individual treatment approach
- * When to seek outside professional help for an athlete!

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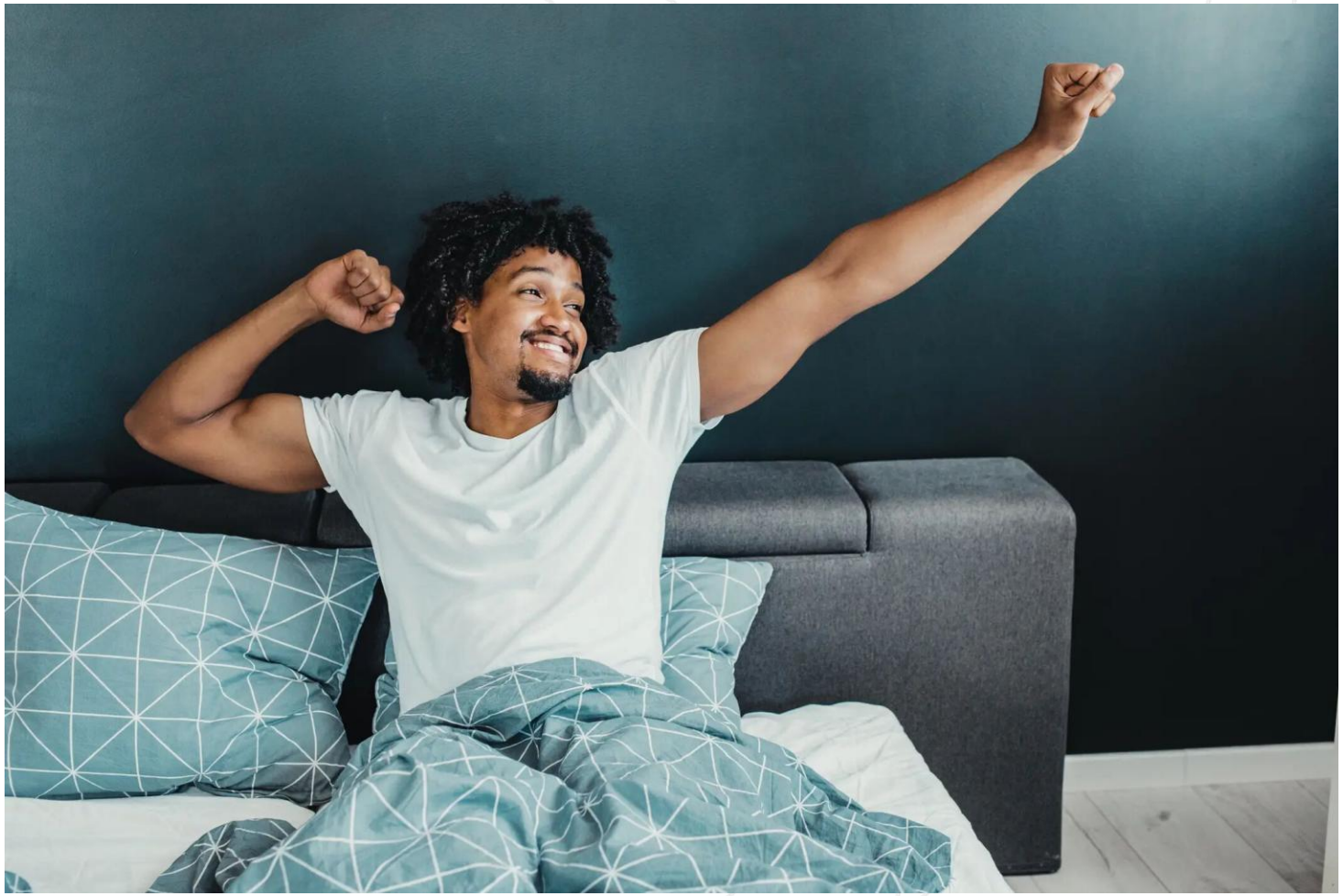
Thank You



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