

Fatigue Management: Cheaper than Therapy

Fatigue Management *Cheaper than Therapy*




UBC

Mike Harnett
President
Solaris Fatigue Management



Types of Fatigue



1. Task Related (Exertion)

- Depleting our body's resources either physically, or mentally
- The more exertion, the more rest and recovery required throughout and after shift





2. Sleep Related

- Inadequate restorative sleep, resulting in ongoing decrements in physical and mental capabilities



Drowsiness/Sleepiness

- Fluctuates; can be temporarily masked
- More fatigue, more drowsy episodes
- Real time effect on performance



Sleep Wars

- A typical day:
 - sleep
 - work
 - family / recreation
- From over 9 hrs to less than 7 hrs today




NSF 2010



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How much is enough?



7 to 9 hrs every 24

Irregular/erratic schedules reduces TST by an average of 2 hours (chronic sleep deprivation)

NSF 2010; AASM 2010; Work-Life Balance of Shift Workers, Stats Can 2008

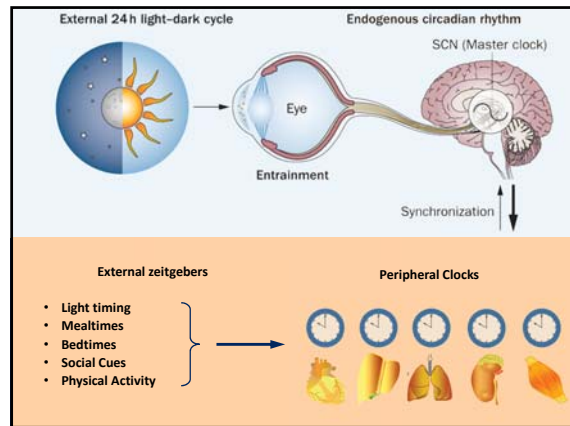
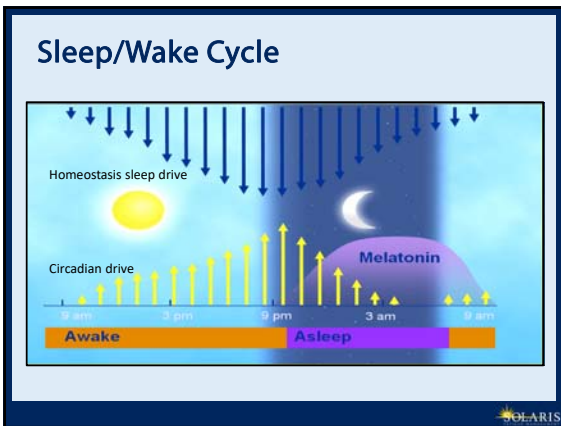


Doesn't my body know better?

- NO! You cannot train yourself to need less sleep
- Accelerates aging of every cell at DNA level



The Science of Sleep


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The Reality of our Species



- Can never "fully" adapt to night shift (<3%)
- Any night shift adaptation gained doesn't last

Light and Melatonin



- Natural sleep hormone synthesized and secreted at night
- Light at inappropriate times can depress production
- Age reduces melatonin production
- Powerful anti-oxidant

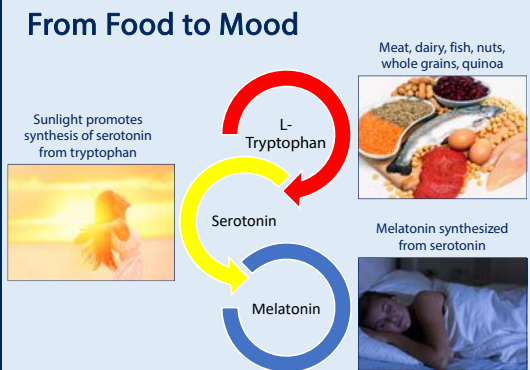
Serotonin



- Melatonin synthesized from Serotonin
- Known as the "happiness" hormone
- Significantly reduced serotonin levels in rotating shift workers



From Food to Mood

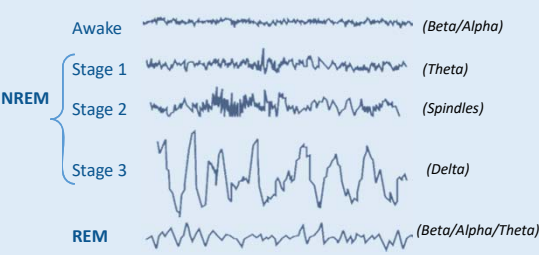


Sunlight promotes synthesis of serotonin from tryptophan

Meat, dairy, fish, nuts, whole grains, quinoa

Melatonin synthesized from serotonin

Stages of Sleep



Awake (Beta/Alpha)

NREM

- Stage 1 (Theta)
- Stage 2 (Spindles)
- Stage 3 (Delta)

REM (Beta/Alpha/Theta)

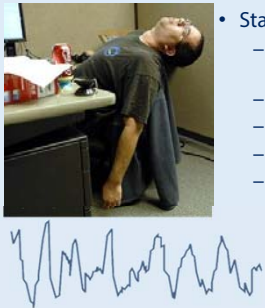
Light Stages of Sleep

- Stages 1 & 2 NREM
 - brain waves slow
 - snoring is initiated
 - motor skill consolidation
 - easier to arouse from



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Deep Sleep

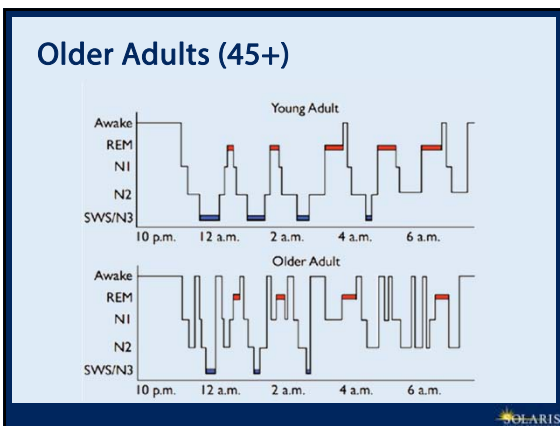
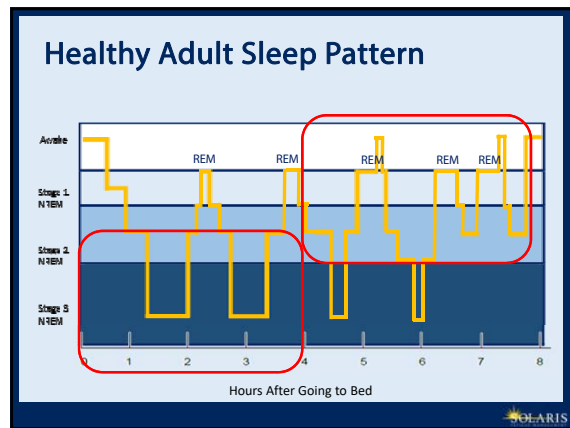
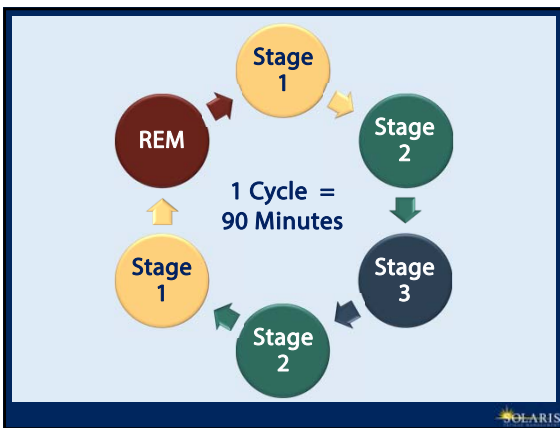


- Stage 3 NREM
 - brain is quiet (long, slow Delta brain waves)
 - HGH released
 - long term memory consolidation
 - recharged immune system
 - hard to wake up from

REM Sleep



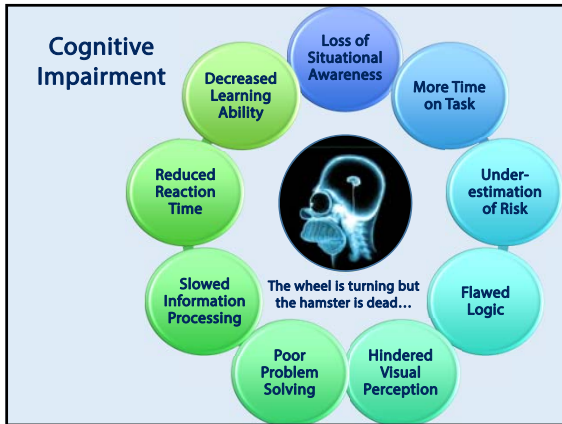
- Body is "paralyzed" while brain kicks into high gear
- Important for
 - psychological well-being
 - primary cognitive repair
 - Short term memory consolidation



Health Impacts

Physical Health	Emotional and Mental Health
<ul style="list-style-type: none"> • Stroke and cardiovascular disorders • Digestive disorders • Kidney disease and scarring • Rheumatoid arthritis • Fertility problems • Various cancers • Obesity • Hypertension and diabetes 	<ul style="list-style-type: none"> • Aggressive and intolerant • Impulsive • Mood swings • Irrational • Decreased motivation • Depression • PTSD • Dementias • Alzheimer's Disease

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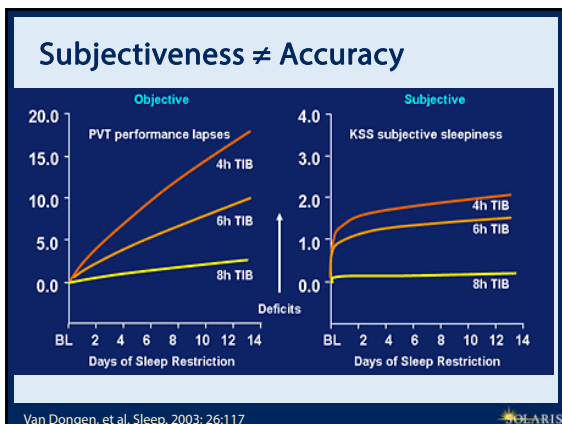
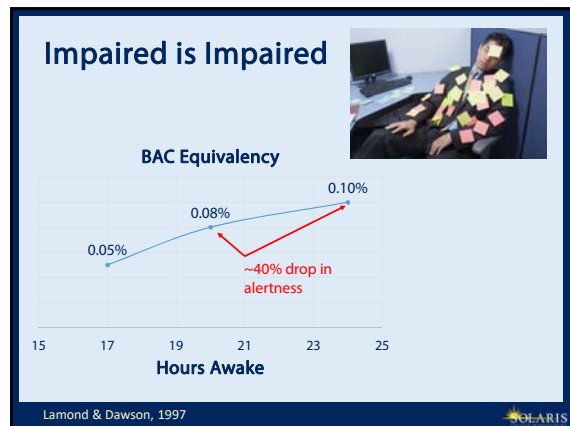


Fatigue and Monotonous Tasks

- Commuting is high risk when sleep deprived

Hours of Sleep	<4	4-4.9	5-5.9	6-6.9
Risk Level for MVC	11.5	5.4	1.9	1.3

AAA Foundation for Traffic Safety, 2016

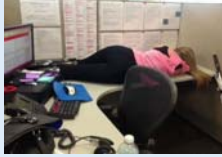


Manage Your Sleep

- Aim for 8-9 hours (rejoice if you get 7!)
- Stick to a routine
- Get daily exposure to sunlight
- Keep your room pitch black
- Use white noise to mask pets, snorers, etc.
- Reduce blue light exposure at night

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The Rules of Napping



- Naps can supplement sleep, not replace it
- Short naps reduce sleep inertia
- Most effective on first night of a sequence of shifts
- Lie down (50% faster)



Zhao, et al. Biol Psychol. 2010; Dr. Neil Kline, American Sleep Association, 2017



Consumer Sleep Study (20,000)



50% of Americans regularly use a mix of two or more sleep aids per night



Sleep meds treat the **SYMPTOMS** not the problem!

ResMed Tech, 2017



Non- Prescription Sleep Aids



- Melatonin NOT for those with depression; try L-tryptophan instead
- OTC and Antihistamines = dementia?
- Cannabidiol – anti-inflammatory, not a sleep aid
- THC –higher rates of chronic insomnia for daily users



Turn off your brain!



Thank you!



Mike Harnett, President
Solaris Fatigue Management
mharnett@solarisfm.com
www.solarisfm.com
604-379-9124

Visit me on LinkedIn
Follow me on Twitter
@mike_the_girl

