

Sleep and Alertness Management Workshop

N = 1
(or 2...)


Sleep and Alertness Management
At Sea (and in a 24/7 World).

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Where do I come from?
Why am I here, now?
Where am I going?
What makes me tick?

one thing you discovered you like about yourself
one vulnerable side of you


Your qi

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WHAT I **WILL NOT** TALK ABOUT

- The (yet unsolved) Legacy From the 19th Century Industrial Revolution (and Thomas Edison)
- Affecting circa 20% of the workforce (of industrialized countries)
- And causing:
 - One third of fatal highway accidents
 - Losses of \$100 billion per year in industrial and transportation accidents, and lower productivity (in the US alone)


Workshop Objectives:

- Basic knowledge and tools of fatigue management, including:
 - Fundamentals of sleep-wake, alertness and circadian regulation
 - Techniques for optimizing performance and alertness levels
 - Polyphasic and multiple napping strategies
 - Early detection of subtle signs of sleep deprivation
 - Countermeasures
 - Strategies employed in offshore sailing races
- Your sleep-wake and circadian history
- Illustrate our methodology, technologies and approach
- Evaluate strategies for upcoming race(s)
- Develop an alertness training program

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GOALS IN A NUTSHELL - HOW TO DO IT:

- Pay Attention to Your Sleep and Alertness
- Know Your Alertness Assets and Liabilities
- Learn to Ride on the Crest of Your Alertness Wave (on its Safe Side!)



The Polyphasic Sleep Perspective: Issues

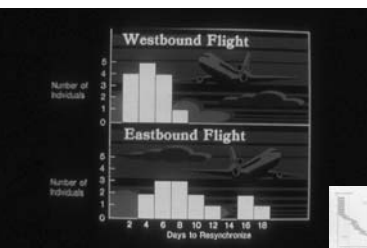
- Can Adult Humans Adapt to Polyphasic Sleep?
- Does Polyphasic Sleep Minimize Impairment Caused by Sleep Reduction?
- Outside the Lab and in the Real World: How Do We Help Individuals Manage Fatigue Under Conditions of Sleep Reduction?

Sine Blumen-Uhr
Flower Clocks



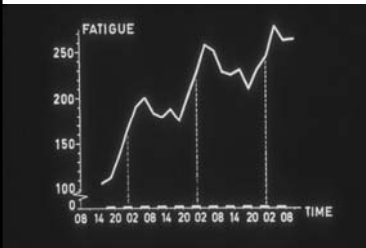
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Westbound: Faster Adaptation (with exceptions)



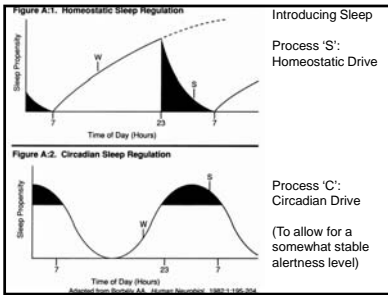
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No sleep for 3 days: Everything is relative...



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Night Owls and Morning Larks

Are you a morning or an evening person?
(Or neither?)
→ Test

Examples of Chronobiological and Sleep "Liabilities"

- Typical of Morning Lark:
 - More vulnerable to afternoon lows
 - Prefers "regular" life style
 - 'Fog' after Dinner
- Typical of Evening Owl:
 - Greater sleep recuperation in the morning
 - Difficulty to benefit from short naps (but can be trained)
 - 'Fog' in early morning

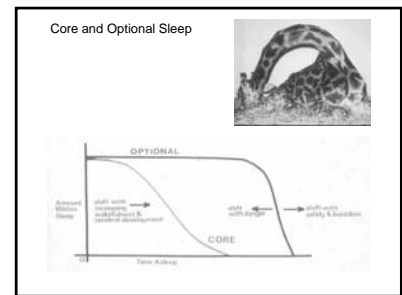
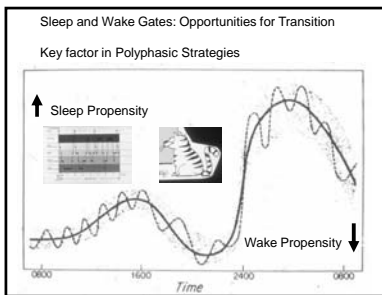
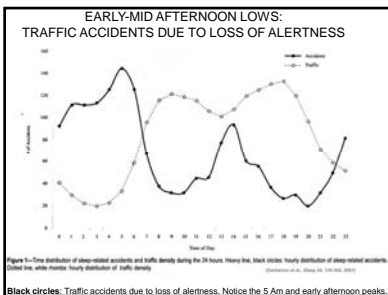
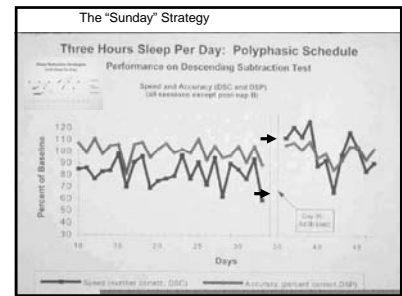
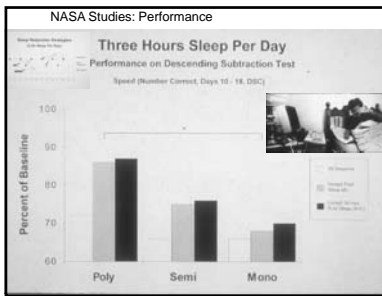
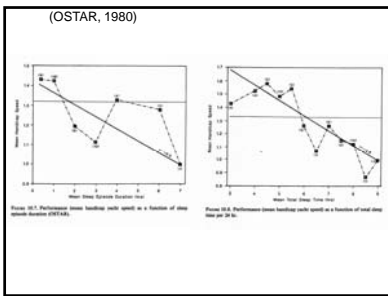
Have We Always Slept Monophasically?

SLEEP IN MAMMALS

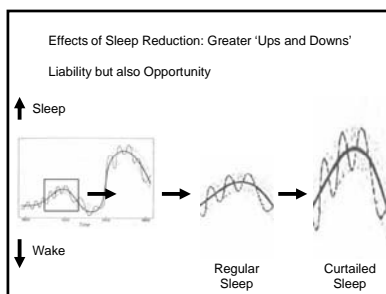
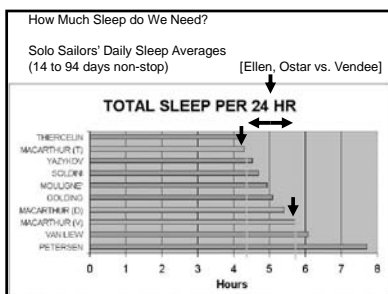
CHILD, PIG, RABBIT, GUINEA PIG, CAT, HAMSTER, CHIMPANZEE, HORSE

Polyphasic versus Monophasic Sleep Patterns:

- Exposure to Danger
- < Body Mass



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- EFFECTS OF SLEEP DEPRIVATION:**
- Poor decision making
 - Unable to Focus
 - Cognitive performance errors
 - Inability to sustain attention for longer periods
 - Mood swings, irritability
 - Disorientation
 - Extreme: Illusions/hallucinations
 - Body temperature
 - Immune function: ?
 - Sleep deprivation and altered states of consciousness:
 - Creative state?
 - Make sure to check the insights after some sleep

- SLEEP DEPRIVATION: TOOL KIT AND COUNTERMEASURES**
- Sleep! A nap can make miracles
 - Bright light
 - Caffeine and other stimulants (Modafinil)
 - Aerobic Exercise
 - Bike or rowing exerciser
 - "Power" yoga (Ashtanga)
 - Sleeping: comfortably or not?

- Exercise: What have you observed about your own sleep/alertness/fatigue? Such as:
- Morningness/eveningness
 - Flexibility, or need for regularity
 - Vulnerable times
 - Afternoon lows
 - Napping behavior
 - How much sleep do you need?
 - What are Subtle, Initial signs of sleep deprivation for YOU?
 - Recuperation time and strategy

- SLEEP AND ALERTNESS TIPS (1)**
- Trust your instincts
 - Pay attention to your own rhythms of alertness and sleepiness
 - Introduce check points in your routine (the "circuit breaker" concept)
 - The brain likes predictability:
 - Regularity helps the brain to predict and be more efficient
 - How much regularity do YOU need?
 - How tolerant are you to irregular schedules?

- SLEEP AND ALERTNESS TIPS (2)**
- Are you a morning or evening person?
 - The brain needs time cues:
 - Sailing East: keep onboard clock synchronized to local time (adjust often)
 - Our body clocks are adjustable: the effect of light
 - Recognize the "free-running" cycle (if present)
 - You may train for sleep/nap times
 - Identify your ideal nap 'gears' – the napping signature
 - Schedules: Use the "Sunday" Strategy

- SLEEP AND ALERTNESS TIPS (3)**
- Alertness is a **finite** quantity
 - High **motivation** helps to boost alertness:
 - HOWEVER, don't count on being always motivated
 - The **best countermeasure** to sleepiness and fatigue is...
 - **Sleep!!** (even a very short nap)
 - Create an environment where "it's **OK to feel sleepy or fatigued**"
 - (It's better to know what is going on, and take appropriate measures, rather than pay the costly price of errors)
 - Pay attention to "**sleep inertia**"

- SLEEP AND ALERTNESS TIPS (4)**
- The myth of alcohol
 - Heavy meal = sleepiness
 - The Cluster Napping Technique:
 - Sleep Inertia to your advantage
 - To perform routine checks half-asleep
 - OK for automatic tasks, but don't count on it for higher functions
 - All safety precautions in place
- LEARN TO RIDE
THE WAVES OF ALERTNESS AND SLEEP