I’ll Sleep When I’m Dead

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

Serotonin
- Synthesized from tryptophan
  - Helps to regulate sleep
  - Known as the “happiness” hormone
- Significantly reduced levels for erratic shifts
  - Higher risk for anger, depression, road rage, anxiety and addictive behaviors

From Food to Mood
Sunlight promotes synthesis of serotonin from tryptophan
L-Tryptophan → Serotonin → Melatonin
Meat, dairy, fish, nuts, whole grains, quinoa
Melatonin synthesized from serotonin

How much does your work schedule interfere with family/social life?

- Not at all: 7%
- Somewhat: 37%
- Very much: 56%

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The Role of Sleep

Sleep Factors

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

2016 Canadian Sleep Review

Amount of Sleep

- 26% 7 hours or more
- 38% 6-7 hours
- 28% 5-6 hours
- 8% Less than 5 hours

Rachel Morehouse, Dalhousie University, 2016

When working on productions, how do you feel about the amount of sleep you typically get when working days?

- 11% I get the right amount
- 38% Could do with a bit more
- 31% Could do with a lot more
- 20% Nowhere near enough

2015 Film Industry Survey

When working on productions, how do you feel about the amount of sleep you typically get when working nights?

- 10% I get the right amount
- 21% Could do with a bit more
- 31% Could do with a lot more
- 38% Nowhere near enough

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Five Stages of Sleep

- Awake (Beta/Alpha)
- NREM
  - Stage 1 (Theta)
  - Stage 2 (Theta)
  - Stages 3&4 (Delta)
- REM (Beta/Alpha/Theta)
Light Stages of Sleep

- Stages 1 & 2 NREM
  - brain waves slow from Alpha waves to Theta waves
  - muscles relax, pulse and breathing slow down
  - snoring is initiated
  - lasts about 30-40 min
  - easy to arouse from

Deep Stages of Sleep

- Stages 3 & 4 NREM
  - brain is quiet (long, slow brain waves) while body repairs itself
  - human growth hormone is produced
  - snoring uncommon
  - lasts about 1 hour
  - hard to wake up from

REM Sleep

- Body is “paralyzed” while brain kicks into high gear
- Important for psychological well-being, cognitive repair and memory consolidation
- Lasts 15-30 min

One Sleep Cycle = 90-120 minutes

Non REM Sleep

1 2 3

2 3 4

5 REM Sleep

Adult Sleep Pattern

Glymphatic System

- Fluid surrounds the brain cells and is littered with waste
- Glial cells arrive via blood, suck up waste, flush it to liver
- The more sleep, the more toxic waste removed
I’ll Sleep When I’m Dead

Lack of REM = Lack of CBF

![Brain images showing normal, mild cognitive impairment, and Alzheimer’s disease](image)

Sleep, emotions and PTSD

With Sleep (good flow) Without Sleep (lack of blood flow)

![Brain diagrams illustrating blood flow](image)

Short Sleepers (less than 6 hrs)

- Accelerates aging
- Affects hormonal balances
  - ↓ sensitivity to insulin
  - ↓ leptin, inhibits hunger
  - ↑ ghrelin, increasing cravings
- Diabetes (50% ↑)

Sleep Disorders

<table>
<thead>
<tr>
<th>Types</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Sleep (insomnia)</td>
<td>Lifestyle (shift work, stress, etc.)</td>
</tr>
<tr>
<td>Disrupted/Fragmented Sleep</td>
<td>Drugs and Alcohol</td>
</tr>
<tr>
<td>Excessive Sleep (hypersomnia, narcolepsy)</td>
<td>Medical Conditions</td>
</tr>
</tbody>
</table>

Common Sleep Disorders

- Hundreds of sleep disorders including,
  - Sleep Walking / Sleep Talking
  - Periodic Limb Movement Disorder
  - REM Sleep Behaviour Disorder
  - Night Terrors
  - Circadian Rhythm Sleep Disorders

Obstructive Sleep Apnea (OSA)

- Repeatedly stop breathing for 10+ secs at a time
- Starving heart of O2

- Affects 1 in 4, most undiagnosed
- Linked to other chronic conditions

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Do you, or have you been told, that you snore or gasp during the night?

<table>
<thead>
<tr>
<th>Never</th>
<th>Seldom</th>
<th>Often</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>38%</td>
<td>26%</td>
<td>12%</td>
</tr>
</tbody>
</table>

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RU – SATED?

Regularly:
- Consistently go to bed and wake up about the same time

Sleep Quality:
- Satisfied with quality vs tossing and turning most of the night

Efficiency:
- Fall asleep within 30 minutes and have few waking episodes

Alertness:
- Wake up alert and refreshed; maintain attentiveness during shift

Duration:
- Average between 7 and 9 hours of sleep consistently

Fatigue is Dangerous

Motor Vehicle Accidents

- Fatigue related crashes tend to ...
  - be more severe
  - generally reflect little or no avoidance action
  - involve high impact speed
  - be single vehicle accidents

How deep is the problem?

- 60% admit to driving while fatigued
- 37% admitted to falling asleep while driving over the past year
- 3% admitted to falling asleep in the past 2 weeks
- 23% say they know someone personally who has crashed due to falling asleep at the wheel

Have you ever nodded off behind the wheel driving home after working on a production?

- Never: 36%
- Rarely, but I have: 43%
- Occ (at least once/month): 16%
- Freq (at least once/week): 6%

2015 Film Industry Survey

Vanlaar et al., 2008; NSF 2016

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I’ll Sleep When I’m Dead

What do YOU do?

Sleep & Alertness Strategies

Optimize Your Bedroom

Buy a good bed

Treat the bedroom as an oasis

Bedroom Science

• Select bedding that facilitates cooling
• Avoid “down” comforters as they trap heat
• Consider weighted blankets
  – Typical range is 15-30 lbs
  – Effective in alleviating anxiety and elevating serotonin

The Darker the Better

• Remove or cover all sources of light

Book vs iPad

Options?

• Stop viewing 3 hours before bed, or
• Wear sunglasses with orange lenses, or
• Download F-lux or Twilight app for devices
• Smartphone options
  • Apple iOS 9.3 “Night Shift”
  • Newest Android has “Night Mode”
I’ll Sleep When I’m Dead

**Tunable Lighting**
- Increases blue light during the day
- Reduces blue light during evening

**No Disruptions Allowed!**
- Block out noise
- Eliminate disturbances

**Cool Room, Warm Feet**

**Stand Your Ground**
- Develop a pre-sleep routine
- No pets in bedroom!

**Hand Shiatsu**
- Sleep latency
- Sleep duration

**Aromatherapy for Relaxation**
- Choose essential oils (plant extracts)
- Calming scents
  - lavender
  - chamomile
  - cedar wood
  - marjoram
  - patchouli

[Image sources: www.sixsafetysystems.com]
I’ll Sleep When I’m Dead

National Sleep Foundation 2014

- 47% of people reported their sleep environment is very quiet
- 36% of people described their sleeping room as very dark
- 57% reported sleeping on a very comfortable mattress or surface

The Rules of Napping

- Can boost alertness for hours
- Avoid random napping; make it routine
- Short naps limited 40 minutes
- Longer naps should be at least 2 hours

Manage Your Sleep

- Aim for 8-9 hours
- Stick to a routine
- Get daily exposure to sunlight
- Reduce blue light exposure at night
- When all else fails...

When you just can’t fall asleep...

- Get out of bed after 30 minutes
- Do something calming
- Journaling
- Cognitive shuffle: BIRD
- Sleep Apps

Alcohol – Our Second Favorite Drug

- Most widely used relaxant/sleep aid
- Too much will
  - cause night sweats (diuretic)
  - fragment sleep
  - eliminate all REM sleep in first half of sleep period (maybe entirely)

Alertness Strategies

- Lemon tea
- Candied ginger
- Peppermint
- Lavender

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Make Smart Use of Caffeine

- Best used strategically
- Takes 15-30 minutes to take effect and the effects can last up to 6 hours

Protein is your friend!

- Meals heavy on protein promote alertness
- Meat and fish
- Cheese
- Eggs
- Beans
- Peanut Butter
- Yogurt
- Hummus
- Nuts and seeds
- Cottage Cheese

Summary of Personal Fatigue

- Fatigue affects us all physically, mentally and emotionally
- We are incapable of accurately assessing our own level of fatigue impairment
- There is nothing more important than sleep to our overall health, safety, performance and longevity

Thank you for being a great audience!

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