I AM SO TIRED!

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A TIRED BRAIN SIMPLY GOES TO SLEEP … ZZZZZZ

If we go long enough without sleep, our brain will simply fall asleep, regardless of what we are doing.
Can lack of sleep actually kill us?

It all depends on what we are doing when we fall asleep—willing or unwillingly!

Americans Are Tired!
2014 Gallup/Newsweek Survey

- 37% very tired more than 3 days per week!
- 25% tired all the time!

Almost 2/3 of population are tired most of the time!

CURRENT TRENDS

- Adults sleep 1.5 hours less per day than our grandparents!
- Teens sleep 2.5 hours less per day since 1962!
**THE HIGH ORDER MENTAL FUNCTIONS**

- Discernment
- Judgment
- Initiative
- Creativity
- Forethought

**Fatigue Primarily Affects Two Areas of the Brain**

- **Thalamus**: gates (passes) sensory information to the higher centers of brain
- **Frontal lobes**: processes info to make decisions
  - current information from senses
  - previously learned information
  - experience

**Fatigue “Chokes” the Thalamus**

**Fatigue Reduces Cognitive Efficiency**

- Lessens awareness of our surroundings
- Reduces ability to process new information efficiently
- Impairs retention of newly learned information
- Decreases long-term memory
- Decision-making falls to chance levels

**But I Don’t Feel Like I Need Much Sleep!**

- Because we are so sleepy we don’t recognize the need of benefits of it.
- Sleep deprivation decreases objective measures of performance
- Sleep deprived college students subjectively rated their alertness higher than did their well-rested colleagues.
Surgeon’s Performance Affected
Performance on laparoscopic training simulator decreases with less sleep


A tired person is inefficient, slower, less safe and makes more mistakes!

THE IMPACT OF SLEEP DEBT ON PRODUCTIVITY

Risk of Short Sleeping
- Sleep debt decreases the entire brain’s ability to function, most significantly impairing areas of the brain responsible for
  - attention,
  - complex planning,
  - complex mental operations, and
  - judgement.

RECOVERY IS SLOW
After four 8-hour recovery nights of sleep subjects still make more errors than when they were rested!
**FATIGUE LOWERS COGNITIVE FLEXIBILITY**

- Slower to switch between proactive and reactive control
- Sleep > Circadian Disruptions
- Faster to switch between proactive and reactive control

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**FATIGUE INFLUENCES OBESITY**

- Leptin
- Ghrelin

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**Major Health Risks**

- Obesity
- Type 2 Diabetes
- Metabolic Syndrome
- Long-term sleep deprivation:
  - Cardiovascular disease
  - Cancer
- Depression and other mental health problems

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**LONG-TERM SLEEP RESTRICTION**

**NURSES’ HEALTH STUDY**

- Relative Risk
- CHD
- Adj. CHD
- Diabetes
- Severity of Dia.

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**“Sleep is the single most effective thing you can do to reset your brain and body for health!”** Matthew Walker, professor of neuroscience, University of California, Berkeley

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**WHICH IS BETTER: BEING TIRED OR DRUNK?**

16-18 hours of wakefulness

**COMPARABLE TO**

legal alcohol intoxication (BAC >0.08%)
SPIRITUAL CONSEQUENCES OF FATIGUE

**Increases Susceptibility to Temptation.**

“Anything that lessens physical strength enfeebles the mind and makes it less capable of discriminating between right and wrong. We become less capable of choosing the good and have less strength of will to do that which we know to be right.” COL 346

**Diminishes Insight into God’s Word.**

“Hearing you will hear and shall not understand, and seeing you will see and not perceive; for the heart of this people has grown dull. Their ears are hard of hearing, and their eyes they have closed, lest they should see with their eyes and hear with their ears.” Isaiah 6:9-10

**Reduces our Spiritual Vigilance**

“And if he should come in the second watch, or come in the third watch, and find them so [watching], blessed are those servants... Therefore you also be ready, for the Son of Man is coming at an hour you do not expect.” Luke 12:38-40

**Lessens desire to communicate with God**

“Sometimes when fatigued by labor or oppressed with care, parents do not maintain a calm spirit, but manifest a lack of forbearance that displeases God, and brings a cloud over the family.” ST April 17, 1884
Spiritual Consequences of Fatigue

Disorientation & Loss of Anchor Points

“For false christs and false prophets will rise and show signs and wonders to deceive, if possible, even the elect.” Mark 13:22

“God instituted the Sabbath as a day of rest to repair nature’s exhausted energies. No mind can continue day after day without cessation, either in business which taxes the mental powers, or in the acquirement of knowledge, without injury. There is no night in Heaven. There is no wear and weariness of the human machinery..."

There we shall never be sensible of fatigue; never need or want repose. There is no tire in performing God's will; we shall never be wearied in sounding his praise. We shall always have the freshness of the morning. But as we are now in this world, with bodies which weary, we must pay heed to God's plans, and take repose when we need it.

PH043, p. 39

Fatigue is the Devil’s end run around God’s end-time people!

How to Get a Good Night’s Sleep

- Learn to value sleep: 8-9 hrs regularly
- Establish a regular routine
- Use a comfortable, firm bed
- Keep it cool and dark
- Exercise appropriately every day
- Develop bedtime rituals
- Put your trust in God

The Stages of Sleep
Functions of Slow-Wave Sleep

Restoration and Growth
- Body recovery takes place
- Blood supply to the muscles is increased
- Vigorous exercise stimulates
- Body temperature is turned down
- Metabolic activity is at its lowest providing for tissue growth and repair
- Growth hormone reaches its 24 hour peak
- especially important for children & teens

Immunity to Infection
- expect more colds and flu if you are sleep deprived
- even modest losses of sleep reduce body immunity
- interleukin and tumor necrosis factor increase

The Stages of Sleep

REM Sleep - 1 (paradoxical)
Memory Storage and Retention
- Much of the growth of specific neural connections to physically hold memories takes place.
- Intensive REM activity follows periods of intense learning.
- Interrupted sleep impairs the transfer of short-term memory to long-term memory.

REM Sleep - 2 (paradoxical)
Memory Storage and Retention
- REM deprived individuals have greater difficulty retaining recently learned material.
- Dramatic improvements in memory retention after adequate REM sleep.

REM Sleep - 3 (paradoxical)
Memory Organization & Reorganization
- ideas/memories are organized into neural networks of associated ideas already in the brain
- computer filing system connecting newly learned information with older information
- memory prioritization occurs
REM Sleep - 4 (paradoxical)

New Learning & Retention through Neurotransmitter Replenishment

- Cells containing norepinephrine and serotonin are inactive during REM
- Replenishment occurs during this phase of sleep, thus preparing the mind for waking activities
- New learning depends on these substances

REM Sleep - 4 (paradoxical)

Retention of infrequently used knowledge and memories

- Memories decay with time. (Use it or lose it.)
- When neural connections in specific neural networks are not frequently stimulated they weaken and information loss will occur.

REM Sleep - 6 (paradoxical)

Retention of infrequently used knowledge and memories

- During REM-sleep, brain synapses are automatically activated in random fashion
- REM-sleep neuronal stimulation causes strengthening of memory circuits.
- “Think on these things.” Phil 4:8 (Refresh what?)

THE NIGHTLY SLEEP CYCLE

“SLEEP ARCHITECTURE”

How to Get a Good Night’s Sleep Things NOT to Do!

- Exercise late in the afternoon or evening
- Eat late, heavy meals
- Snack before bedtime
- Watch exciting/depressing TV or movies
- Vary your bedtime from day-to-day
- Engage in vigorous discussions/arguments before retiring
- Make big decisions before going to bed
- Use alcohol or caffeinated beverages

Importance of Good Architecture

- Enhances learning
- Maximizes recuperative value of sleep
- Significantly improves productivity!
- Supports the immune system
- Short nights of sleep eliminate the long REM periods of early morning.
How to Get a Good Night's Sleep
Things to Do!

- Learn to value sleep
- Unplug from the electronic life
- Establish a regular routine
- Use a comfortable, firm bed
- Keep it cool and dark
- Exercise appropriately every day
- Develop bedtime rituals
- Get adequate sleep every night
- Put your trust in God

Sleep:
As Important as Diet and Exercise
(Only Easier!)