Is Sleep More Important Than Diet and Exercise?

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Overview

• Current physical health priorities
• How important is sleep?
• Inter-relationships between sleep, eating, and activity?
• What do sleep disorders tell us?
• Suggested physical health priorities
• Questions / Discussion
sleep

physical health

activity nutrition
What about other aspects of health: 
*Mental, emotional, spiritual, etc.*

and their interdependence with 
*physical health?*

- individual
- complex
- less-studied
- beyond the scope ...
Physical health priorities

1. Nutrition
2. Physical activity
3. Sleep
What does Popular Culture tell us?

Deities of diet!

Icons of exercise!
Superstars of Sleep?

And, how many sleep-related reality TV shows, game shows, etc. have you seen? (There actually have been a couple movies!) (Don’t forget about cutethingsfallingasleep.org!)
Word on the street: Sleep is …

• Boring
• A waste of time
• For slackers
• What it is
• Important, I guess, but …
• Sleep?
• Huh?
• Umm, I gotta be somewhere
Physical Health

- Activity
- Nutrition
- Sleep
Is sleep really *that* unimportant?

“It don’t get no respect, I tell ya!”
How long can we go without ...

- Oxygen: few minutes
- Sleep: few days
- Water: few days
- Food: many days
- Activity: ?
- Sex: ?
What can we choose to go without?

- Oxygen  X
- Sleep    X
- Water    ✓
- Food     ✓
- Activity ✓
- Sex      ✓
What are the consequences of going without ... 

- Oxygen
- Sleep
- Water
- Food
- Activity
- Sex
Will eating at McD’s vs. Francine’s Fiber Farm cause events like these?!?
What about synergisms among the inputs?

sleep

physical health

activity nutrition

To sleep ... perchance to run? Or eat?!?
Does sleep affect diet?

Probably so:

- Short sleep independently associated with weight gain/obesity (review: Patel and Hu, 2008)
- Sleep restriction by 2 h increases snacking 25% (Nedeltcheva et al., 2009)
- Neuroendocrine and metabolic effects:
  - ↓ leptin + ↑ ghrelin → ↑↑ appetite
  - ↑ insulin resistance
  - (Spiegel et al., 2004 and 2005)
- Other possible mechanisms:
  - Less healthy food selection
  - More time to eat
Does diet affect sleep?

Not so well studied, but no dramatic effects?

- High-protein and high fat foods
- Amount vs. type of food
- *Timing* of meals (nocturnal GERD)
- Bottom line:
  We’re supposed to sleep on an empty stomach
  *(That’s why they call it breakfast = break + fast)*
Does activity affect sleep?

Without question, & in good ways!

• Increased delta sleep
• Increased sleep duration
• Treatment / reduced severity of sleep disorders:
  - OSA
  - RLS
• Your experience?
Does sleep affect activity?

The answer is obvious, right?

- **Epidemiology:** positive sleep-activity association
- **Sleep repletion** studies (Mah, Dement, et al.)
  - Collegiate basketball players
  - Almost 2 h longer sleep
  - 4% faster sprint speed
  - 9% increase in free throw and field goal percentage
- Your experience?
Does sleep affect activity?

“I used to work out all the time, but I got to where I was just too tired, so I quit. Then, I started gaining weight … “
What have we learned from sleep disorders about these inter-relationships?
Does OSA treatment promote weight loss?

• Our goal: yearly follow-up

• PAP Treatment Success Index
  - compliance C: How much do they use PAP?
    (We don’t care whether they use it 4 h per night; we care whether they use it all night!)
  - effectiveness E: How well does it work?
  - multiplicative: \( C \times E = TSI \)

• Follow-up questionnaire:
  - Benefits such as
    Increased activity?
    Increased energy?
    Reduced dyspnea?
Results: They said they were more active, butt ...

- Compliance = 91%, effectiveness = 92%, so TSI = 84%
- Increased energy: 69%
- Increased activity: 64%
- Reduced dyspnea: 36%
- Stories: lawnmowing, kitchen cabinets, playing w/ kids
- Mean weight increased 4%
- Finding agrees with Harsch et al., 2003 and Pour Schahin et al., 2008
BEFORE STARTING CPAP

AFTER STARTING CPAP
Kids are different!

Sleep problems

- Children → ADD / ADHD
- Adults → daytime sleepiness
Sleep, activity, and obesity: the challenge in children


- Obese and hyperactive kids with OSA

- Adenotonsillectomy

- Outcomes:
  - OSA status
  - (hyper)activity
  - weight --> BMI
They found WHAT!?!?

- Surgery corrected OSA
- Activity decreased, somewhat moreso in girls: the kids stopped fidgeting, so ...
- Weight gain **accelerated**; obesity **increased**
- Treatment for childhood OSA = prescription for adult OSA!

A culture of sleeplessness & inactivity: we’re killing ourselves and our kids!
Physical health priorities

• Exercise corrects many of the problems caused by eating unhealthy food.

• Eating only the healthiest food corrects few of the problems caused by lack of physical activity.

• Neither excellent diet nor exercise substitute for adequate, healthy sleep.
Physical health priorities

1a. Sleep

1b. Physical activity

2. Nutrition
Physical Health

Activity

Sleep

Nutrition
Myths of Sleep Exposed!

**Myth:** Obstructive sleep apnea (OSA) is the most common sleep disorder.

**Fact:** Incidence of OSA is high, underestimated, and increasing. However, *Insufficient Sleep Syndrome* is more common than OSA.
Of course everyone knows that we don’t think or perform well on insufficient sleep, don’t they?
Pop quiz:

What profession is most guilty of ignoring the importance of sleep?

Hint: Look in the mirror.
Answer: The *medical* profession!
Speaking of diet …

Lunch provided to a medical office from a drug company
Lunch provided to a medical office from a sleep or exercise advocate
Take-home Messages:

• The body prioritizes sleep over most other drives
• Take care of your sleep, and it can help take care of your other things
• If you’re awake, you eat
• Sleep and exercise form a positive synergism
• Help the medical profession practice what sleep medicine preaches
• Continue being a “sleep cheerleader” for your patients!

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Your Homework:

Come up with a sleep game show or reality TV series!
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Sleep Resources

- National Sleep Foundation
  sleepfoundation.org

- Medline / PubMed (National Library of Medicine)

- American Sleep Apnea Association
  sleepapnea.org
  sleepapneainfo.com

- Restless Legs Syndrome Foundation
  rls.org

- sleepeducation.com

- American Academy of Sleep Medicine
  aasmnet.org

- Sleep Consultants, Inc.
  sleepconsultants.com
  talkaboutsleep.com

- sleepnet.com

- isleptgreat.com
Pop quiz:

What common cause of death from sleep problems has nothing to do with any disease process?
Answer:

Sleepy driving

And, it often injures or kills others.
chronic inactivity
poor diet
inadequate sleep

airway narrowing
resp. mechanics

fear of CPAP & avoidance of treatment
claustrophobia

sleep interruption

somnolence / fatigue
ADHD

accidents
depression / anxiety / social dysfunction / cognitive dysfunction / dementia

sleep apnea

hypoxia + hypercapnia

edema

glucose intolerance
insulin resistance
diabetes

sympathoexcitation
hypertension/
cardiovascular disease
MI / CHF / stroke
dysrhythmia

somnolence /
fatigue

GERD
nocturia

acid aspiration
lung disease

bph

sexual dysfunction

nightmares
depression / anxiety / social dysfunction / cognitive dysfunction / dementia

claustraphobia

hypertension/
cardiovascular disease

adhd

MI / CHF / stroke
dysrhythmia
Adolescence

- Phase delay to “owl”
- Sleep need still higher than adult
- Adult disorders begin to appear
- Social and societal factors emerge
- Child takes over as source of problems
Healthy sleep tips:

- Get enough sleep
- Enjoy daily physical activity
- Brief naps are good when needed
- Avoid supine sleep
- Tilt bed slightly head-up
- Avoid TV and computers near bedtime
- Keep bedroom cool, dark, and quiet
- Use bedroom only for sleep and sex