



EXPERT NOTES

Dan Pardi

Sleep Researcher



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A Sleep Researcher Perspective

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Dan Pardi is a researcher at Lyden University in the Netherlands. There he studies the relationship between sleep and lifestyle factors such as diet. He has also examined the effects of sleep upon:

- hormones related to feeding behavior and energy regulation
- all levels of cognition
- decision making
- information processing
- mood

Entrepreneur

Dan's Plan

The objective of [Dan's Plan](#) is to help people simplify their daily health practice; namely, knowing how to make best use of technology and information to get and stay in the healthy zone consistently.

- centered around food, mood and sleep
- use technology products to help manage weak behaviors and keep you in your "zone of health"

I. How Do You View The Problem

Survey Says: We're Sleeping 20% Less Than in 1960

On average we're sleeping 20% less than in 1960 when people reported 8 ½ hours average per night. Since then, surveys show less and less rest. The most recent study done by the [National Sleep Foundation](#) found that most people are sleeping 6 ½ hours on weeknights, and 7 hours, 20 minutes on weekends

Serious Ramifications

Sleep is of fundamental importance to our well-being. Nighttime sleep provides a complementary or compensatory response to daytime activities. Things happen during the night to refresh us from wear and tear and prepare us for next day's activities.

Without adequate sleep the following processes are not completed:

Strengthened Immunity

During sleep our bodies refresh the immune system.

Memories Formed & Solidified

"A good memory is an active process of forgetting things that aren't important."

During sleep the brain:

1. Prunes

Pruning means the brain gets rid of memories determined unimportant and makes room for fresh information

2. Strengthens

Memories of information deemed desirable become strengthened

At night the brain goes through patterns of activity in stages. Each stage introduces important functions, including reinforcing nerve connections around memories.

A variety of things happened during the previous day. You met new people, learned new information, etc.

During sleep that new information is played over and over so that synaptic connections are strengthened.

II. What Symptoms Should One Look For?

"A shifting, unfocused mind is the hallmark of a tired mind!"

Ultradian Rhythms vs. Symptoms

Dips during certain times in the day may or may not be an indicator of sleep deprivation. [Ultradian Rhythms](#) may carry a mid-morning or afternoon sleepiness. If it's only happening occasionally, this is natural and okay.

General Symptoms

- Are you sleepy?
- Need a lot of coffee?
- Hard to focus? Mind shifting?

A shifting, unfocused mind is the hallmark of a tired mind! A lot of ADHD is thought to be related to lack of sleep.

Risky Behavior

People tend to be poorer decision makers when they lack sleep. You'll notice larger and more frequent risk taking because of what is happening beyond our consciousness.

Circadian Misalignment- A Broken Equilibrium

Over a 24 hour period there are rhythms controlled by the light/dark cycle of the natural environment. In our bodies this manifests as the “[circadian rhythm](#).”

When light or dark enters the eye it affects the “central clock.” Most people have late night TV and depend on alarm clocks, which takes them out from the natural rhythm. Falling off track from circadian rhythm leads to increased rates of illness because these rhythms affect all body processes.

Disease

Living in an unnatural environment we rely on things like alarm clocks to regulate our sleeping and waking. This is a sign that our rhythms are out of balance, and with this we see increased rates of:

- Cancer
- Cardiovascular Disease
- Diabetes
- Etc.

III. What Aggravates The Problem?

Choice

There are two primary reasons people lose sleep:

1. **Clinical**
organic sleep problems such as the [parasomnias](#) such as sleep walking, teeth grinding, narcolepsy or sleep apnea
2. **Choice**
the *choice* not to sleep, and this is the bigger issue

Asynchronization

Asynchronization occurs often because, during the day, people are indoors, exposed to low lights, sitting and not moving all day and less mentally stimulated. At night, that lack of stimulation leads to shallow sleep.

“Asynchronization involves disturbances in...biological rhythms that normally exhibit circadian oscillations. The...triggers for asynchronization include a combination of nighttime light exposure, which can disturb the biological clock and decrease melatonin secretion, and a lack of morning light exposure, which can prohibit normal synchronization of the biological clock to a 24-h cycle and decrease activity in the serotonergic system.”

(<http://www.ncbi.nlm.nih.gov/pubmed/20937552>)

(NOTE FROM ESSE: above quoted, italicized text was not in the interview but might be useful info)

Technology

- Remaining physically and mentally stimulated into the night
- The mind is engaged so we don't feel sleepy
- Blue light rays enter the eye, stimulating the brain
 - [“ipad insomnia”](#)

Sleep Apnea

Sleep apnea, a breathing issue, is common in men and women. Anyone who snores has a higher risk of sleep apnea. This can lead to daytime sleepiness because it causes you to wake up during the night and not even know it. Study subjects with sleep apnea were up HUNDREDS of times through the night. If you snore and you have daytime sleepiness, check with your doctor about sleep study and options to address.

Alcohol

- Can make u feel sleepy, but when alcohol is metabolized it can be “alerting,” ie disrupts sleep
- Instead of deepest sleep, experience wakefulness through the night and awake groggy
- Hangover due not to toxicity but lack of deep sleep
- Alcohol is “probably the biggest one, dietarily”
- Drink lightly in the evening

In Summary:

- Effects upon sleep of of carbs vs. fat vs. protein are speculative
- Watch the alcohol
- Watch all stimulants
- Watch the light and mental stimulation

IV. How Would You Treat The Problem?

The goal is for everyone to be a *restorative sleeper*. Accomplishing this involves an entire lifestyle so that over a 24-hour period you're doing the things day, evening & night that assist in getting restorative sleep.

Assess

“Subjective” Assessment

A subjective assessment is vital. If you use objective averages you can prescribe a sleep deficit! Some need 7, 8, or 9 hours of sleep regularly, producing a mean of 8 hours. If some need 9 but you prescribe the population's average of 8 hours, those individuals will be sleep deprived.

You can't *control* your sleep entirely, but you can control:

- timing, and
- duration

That is, you can control how much time you're physically in bed. Then you give yourself the *opportunity* to get the sleep you need.

In essence, you *position* yourself for adequate rest

From "Good" to "WOW!"

Your sleep tonight is influenced not just by what you did today, but by what you did in the past week or two weeks or the last month.

So to assess,

- be consistent for three weeks
- journal sleep and waking patterns
- see how u feel

If you keep waking up at 7 hrs and 45 minutes, that might be your healthy sleep pattern. Or after sleeping for 8 hours you might feel pretty good. Then, adding a half hour to sleep duration many feel WOW.

In Summary

Focus on the actionable steps you can take:

- control bed time
- control in-bed duration
- journal/meditate on how you feel

Technology: Dan's Plan

You might also use [sleep tracking](#)

- technology helps monitor timing and duration of sleep

- helps determine what time you should get to bed

More Tips

- Keep a record
- Practice playing with various times in bed.
- Keep your sleep consistently timed; if switching bedtimes, even the same amount of sleep will not have the same recuperative power

Sleep Hygiene

This applies to everyone, whether you have an organic sleep issue or have other causes. Good sleep hygiene involves the bedroom environment, evening preparations and daytime activities.

Night

Bedroom should be:

- comfortable
- cool
- quiet
- completely dark
- inhibitive of interruption

Some tools to help you compensate for an interruptive sleep environment:

- ear plugs
- eye mask
- blackout shades

Evening

Create a “smart” approach:

- quiet down
- dim the lights
- set a bedtime (*really sleep-time*): *count backwards the number of hours you need for rejuvenating sleep**
- plan to be asleep, not just getting in bed, by that designated time
- create a bedtime routine**
 - “disconnect”
 - electronics off
 - brush your teeth

**so if you need 8 hours and need to rise at 7am; you should prepare to be asleep by 11pm*

***your routine provides a pattern that alerts your body that it's bedtime*

Day

Combat [asynchronization](#)

- **sunshine:** get outside and drink in the bright light to increase melatonin by 50% at night, and align with the circadian rhythm
- **activity:** use your body; sleep & physical activity are two sides of the same coin

Differences Between Men or Women?

It depends on the phase of life.

Menopause

Women during menopause women tend to have sleep troubles. A progesterone metabolite becomes active in the GABA system, causing more anxiety and more arousal at night.

V. What Dietary Recommendations Would You Make?

"The information about food and sleep is really not that compelling to me."

FOOD

Research on Diet

There is much talk about the effects upon sleep of a low protein or low carb or higher fat diet. The information is new and conflicting.

Meal Timing

While the effects of specific macronutrients upon sleep are unclear, it is likely that having a meal close to bedtime has the potential to lower quality of sleep. The body is forced to work hard to digest food, which might compromise deep sleep.

Ghrelin & Growth Hormone

Ghrelin is a hormone released by the gut which stimulates hunger and feeding. Ghrelin levels naturally rise and lower throughout the day. It's presence is important for stimulating the secretion of human growth hormone (HGH).

When you eat your last meal 4-5 hours before bedtime, ghrelin levels have a chance to rise in time for bed. This increases HGH, which is closely integrated with deep slow wave sleep.

A late night meal will:

- Suppress ghrelin
- Thus reducing the release of HGH for that night, and
- Causing your body to "work" while you should be resting

Hunger at Night

If you get hungry at night “try to sleep through it.” Over the course of the next couple of days you might then sleep more easily.

There’s even a condition, when this becomes severe called [SRED](#) (sleep related eating disorder). SRED is a [parasomnia](#) where people unconsciously travel from bed and eat. Sometimes they ingest foods that are uncooked and even toxic substances.

SUPPLEMENTS

Supplements are not well studied. These should *only and always* come after addressing lifestyle factors.

Placebo

Placebo is not a “phony” but a legitimate effect that takes place because you *believe* it’s going to take place. There are even research-examples of people who *knew* they were taking a placebo and it was still effective.

Magnesium

- Involved with over 300 enzymes
- Related to formation of serotonin
- Not well studied to know if it helps sleep initiation
- Not a bad thing; good reports.

5-HTP

- Crosses the blood brain barrier
- Precursor in the biosynthesis of serotonin, which is several biochemical steps from the production of melatonin
- Plausible effects; good reports.

- Normal doses should be ok

Melatonin

- Hormone
- Antioxidant
- Anti-cancer mechanism
- Affects how the master clock in the brain is working
- Not a potent sleep drug
- Dose ½ mg to affect circadian rhythm
- May be complicated but useful for [jet lag](#)

Herb Teas

- valerian root, etc.

Pharmacological Treatments

- Ambient, etc.
- Periodic use ok
- Chronic use dangerous

VI. What Lifestyle Recommendations Would You Make?

Get in “The Health Zone”

Establish an effective daily health practice for immediate and long term health. Exercise, food and diet all collude towards this state of well being.

Walk

Walk 10,000 steps/day to better handle blood glucose from meals. A sedentary lifestyle leads to blood sugar spikes.

Use Tracking Technology

Tracking Devices

Going to sleep on time doesn't feel as exciting or impressive as accomplishing a finished marathon. That is, saying *I slept 9 hours* may not impress your friends as much as *I ran 23 miles*, but it's vital. Using technology helps you to track the progress you've made.

[Health Zone Score/Dashboard](#)

Dan's Plan created a **dashboard** to help you stay in your "zone of health." [Sign up](#) to get free access to the Health Zone Score on the Dan's Plan Dashboard.

The [devices](#) track:

- high/low intensity exercise
- sleep duration
- steps (FitBit One Tracker)
- body weight

They also:

- help to assess long range cycles to determine patterns of sleep
- are powerful for modifying behavior

Make Dan's plan or one of these tools a part of your health practice so that you have the information in your own hands, rather than having to go doctor and get exams and wait for results, etc.

WATCH OUT! Device competition

Extras on the device may be fun but actually a distraction. Watch out for the ones that overpromise, giving lots of features that ultimately offer no value.