



EXPERT NOTES

Mark Effinger

Neurochemist



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A Neurochemist Perspective

Mark Effinger

Mark has been involved in chemistry since childhood.

He later became passionate about biochemistry and physiology while bodybuilding and weightlifting during the mid-80s. Mark's interests accelerated in '93 when he got into subsystems and hormone development. That progressed to interest in Human Growth Hormone (HGH) release mechanisms. By the late 1990s and early 2000s he was working with doctors in the Vancouver-Portland Metro area and reference doctors in Silicon Valley regarding how physiology can be optimized.

"My whole thing was life extension and how to keep the brain increasing in effectiveness in both creativity and productivity; and then energy management and energy balance."

He says, "As a result of a software company that I own I've been able to have access to incredible minds including the guys at the orthomolecular society and some of the more leading edge researchers in biochemistry. As a result we've been able to create products with the oversight of some of the most incredible brains in the industry."

This industry "has an UNLIMITED horizon. There's breakthroughs on a weekly basis and if you take components of those breakthroughs you can make hybrid products and solutions for people that are so much stronger than an individual nutritional supplement."

I. How Do You View The Problem of Sleep?

We live in a society that praises stimulation and down credits sleep and relaxation. Unless you're into yoga and meditation, you're playing on the other side of it.

The typical mindset is thinking, *How many hours a day can you operate on the highest level? How hard can you push yourself before you break down?* So sleep is discredited.

We think *I have to* rather than *I want* or *get* to sleep.

It's an attitudinal thing that we need to adjust as a society.

If you don't do the sleep side of health your performance will be a FRACTION of what it could be. Many people are walking half dead, in a fog, at a low level of processing. They think it's their optimal state but they're actually running at a reduced level. **Fixing the sleep cycle could improve them by 10-20%**, and this is not a few, but the majority of us.

People are thinking *all I need is another red bull or another coffee and I'll get my performance up*, but when you do this you're actually DRAINING your system of its ability to respond and work correctly.

In Summary,

- The #1 problem causing us to lose sleep is ATTITUDE
- The #2 causative is that we praise HYPE AND PERFORMANCE

II. Why Is Proper Sleep Important?

"That's straight forward man."

#1 - Physiological repair. Your body doesn't do that when you're awake. You'll get little bits of healing while awake but not deep rejuvenation. You have get into the sleep state for repair to happen.

#2- Memory consolidation. Sleep is vital if you want your mind to operate correctly. You need deep REM sleep for the brain to store information and be able to recall it later. While you sleep your brain is reinforcing neural pathways, highways to where the data is stored. You get that, your body works better.

Main consequences of poor sleep

Without adequate sleep the body won't be able to rejuvenate adrenal, serotonin and dopamine stores, all of which make you feel good and give you energy.

When you're "out of wack" because you're not getting enough sleep you may notice you get "snappy." This is an indicator of adrenal fatigue and low serotonin levels.

Stress events cause an adrenalin rush. Serotonin then floods to counteract the stress-induced fight or flight mode. Suddenly you've lost a lot of serotonin, but you only manufacture so-much serotonin in a 24-hour period. If you use it up on an adrenalin rush you'll have no serotonin available to help you feel good and to manage thought process in other areas of your brain during the rest of the day. So you feel fatigued. You grab a coffee, which starts a whole bunch of subsystems in your body going and... you're screwed. You'll be on a blood-glucose cycle problem.

In Summary,

- Body quits rejuvenating well
- You start getting cortisol buildup, hence fat accumulation and more
- Adrenal burnout
- Don't feel good because you don't get enough serotonin or dopamine
- *Along with that* comes difficulty learning and remembering because you don't have enough choline to create acetylcholine, so the brain doesn't have available biochemistry to transmit thoughts efficiently and go into "recall" mode efficiently.

III. What Symptoms Should One Look For?

- Memory problems.
- Bone loss.
- Muscle degradation.
- Cardiology – plaque starts to build.
- Testosterone declines DRAMATICALLY ("falls off a cliff")
- Body fat increases.
- Stress increases.
- Ability to recover takes longer.
- Enjoyable things are no longer enjoyable because serotonin and dopamine are not flowing well.
- Depletion of acetylcholine, which is necessary for good decision making; thus, difficulty making good decisions.
- Fatter. Unhappy. Don't feel clear. Need a stimulant.

Difficult menopause/andropause transition. Want a smoother transition through high performance, menopause (women) or andropause (men)? You need a good 7-8 ½ or 9 hours of sleep each night or over a 24 hour period. ie If you can't get all those hours of sleep during the night you can break it up by "progressive napping."

Caffeine dependency. Notice: When do you fall off your performance cliff during day? Do you need coffee in the morning to feel alive? If so, go off or ween off coffee. If you need it, there's a problem.

Adenosine receptors are dampened by caffeine. When they heal and get strong they'll clear out the brain for need of caffeine. Give it 4-5 days, 10 days max, and the clarity returns.

IV. What Aggravates The Problem?

Not paying attention to diet. Not watching what you eat and when you eat. We tend to do the wrong things to get into a sleep state.

For example:

Too much alcohol at night. Drinking a liter of wine before bed. This is too much!

Taking sleep inducers and not cycling them. If you take Excedrin PM you'll wake up groggy and with a hangover. These are hard on your liver and build up other issues in body that also make it harder to sleep. It's not bad to take something to help induce sleep but it's important to cycle them. Otherwise the body acclimates and we find ourselves needing more and more of it.

If you're going to use external sources use substances that will help build your body.

Stimulants. Because of hangovers caused by sleep inducers we drink more coffee and crave more stimulants. As a result we shut down adenosine. Adenosine receptors are hyper damp and you don't have hormone related release elements that you desperately need to feel clear.

Working out too late. Some can get away with it but only because they go to sleep later and get up later. Make sure you're managing and are cognizant of your sleep cycles.

Stimulants too late in the day. Even simple things in foods. It could be a coke with dinner or a rum and coke. Rum "depresses," coke "awakens." Confusing signals for the body.

Body temperature. An hour before bed get your body temperature up. That allows your body as it comes down in temperature to encourage a better sleep mode.

Ambient and computer light. Lower monitor brightness if you're on the computer late at night. Turn off extra ambient light.

Prepare the environment. Prepare your room for sleep. Little LED lights can be an impediment. Sleep in a completely dark, quiet room. "I recommend everybody try ear plugs for a week...They can work miracles on how deep your sleep goes."

V. Treatments/Dietary Recommendations?

Break it down into:

- What relaxes the body?
- What relaxes the mind?
- What stimulates dream?
- What gives you deeper sleep?

SUPPLEMENTS

When working with supplements combinations as opposed to isolated elements are key.

Relaxes the body

Potassium Gluconate. 300-600mg on a nightly basis (amazing!).
Relaxes the muscles.

For example, restless leg syndrome is usually brought on by too many stimulants and pharmaceuticals, but potassium gluconate works wonders for it.

I recommend powder form. It hits the system faster and harder.

Melatonin. Combine 500mg of potassium gluconate taken with a little water and 300mcg of a sublingual of melatonin (if melatonin works for you) to fall asleep in 30-60 minutes.

Some people take the melatonin and wake up four hours later. It's a common problem. To combat that get the sublingual melatonin from Trader Joe's. Take it in two doses about 20-30 minutes apart.

ZMA. Zinc, magnesium and vitamin B6. This is a bodybuilder supplement good for replenishing low zinc levels, but it's also good

for sleep. Beware, it can stimulate body to go 'take a dump.' Cycle with melatonin and 5HTP for good effects.

Tryptophan. Get it in powder or capsule form; as always, powder is preferable.

Causes deeper/longer sleep

5HTP. To help induce a longer sleep add 5HTP to melatonin. Cycle 3 days on and a day or two off, or every other day.

Nootropics "Sleeping Powder" with Huperzine A, Phenibut and Bacopin. A nighttime nootropic (brain nutrition). It will give you very deep sleep and a long REM cycle. Its recuperative properties are exceptional. When you get the right dose you'll wake up very sharp.

Arginine AKG. To improve/induce HGH release in the early mornings. Helps to supercharge the brain and cause super good sleep. *I mix it with tryptophan and alpha GPC to make a complex formula based on body weight, size and sleep habits.*

Arginine AKG + Lysine. Lysine is good in combination with arginine AKG to induce HGH during the morning.

Calms the mind

GABA. Up to 1 – 1 ½ g. Helps calm a racing mind.

L Theonine. To relax the mind, but be careful. It's a reverse bell curve for performance. If you take too little you'll feel nothing. If you take just enough you'll have a quiet mind and it'll get you relaxed. If you take too much you'll be too alert.

L Theonine + caffeine are a pseudo-nootropic, not creating new brain cells but do help to make you feel clearer and alive without the edge you get from too much coffee.

[Aniracetam.](#)

[Avena Sativa.](#)

Stimulates Dreams

Methylcobalamin/Vit B12. Helps induce quiet but strong dreams. You won't be running away from monsters but solving problems.

Alpha GPC. A form of choline that easily passes the blood brain barrier. It stimulates thought and activity. 350-600mg will cause your dream states to be much higher.

(BUT if you have too much mental stimulation you'll have trouble sleeping. That's where GABA comes in.)

B12 + B6. Vitamin B12 and B6 taken together at the right time with the right support nutritionals will help you get into an active dream state so that you can actually solve a lot of problems in dreams. Then you can use sleep cycles to solve problems and debug issues.

If you take 1 or 2 of these in isolation you'll have a little bit of an experience; but if you take a combination of these you'll have an exceptional experience, which can make a huge difference in your performance.

AVOIDING ADDICTION & TOLERANCE

Drugs like excedrin PM and Sleep-Eze affect many subsystems in the body. These are “absolutely addicting.” Most of the nutritional supplements such as those listed here, which are amino-acid or plant based, are safe and non-addictive especially if you’re cycling.

Cycling I: on/off days

- Start with “attack dose” to initially build up a blood level.
- Over time, reduce the amount of supplement you’re taking.
- Take it for no more than 3 days in a row with a break of 1-2 days.
- On off-days do things that lend well to relaxation.
 - Finish your workout in the early evening.
 - Don’t take stimulants in the afternoon.
 - Eat a banana to get potassium.
 - Get plenty of calcium such as from milk or almond milk.
 - Don’t have a mindset that says *I’ll be awake all night*.
 - Practice your nighttime rituals such as breathing rituals.

The supplements that we recommend don’t build up in body, but all will develop tolerance if abused or over used. To avoid tolerance, cycle off of them frequently. Match your cycling rhythm with your activity level.

Cycling II: alternate protocols during “on” days

For example, one day you might do melatonin and 5HTP. The next you might try ZMA and bacopin/huperzine A. The following might be an “off” day.

DIET

Eating well vs. eating crap makes a HUGE difference!!!!

- **Protein.** Make sure your diet has very good protein levels.

- **“Full Strength.”** Recommended 1-2 protein shakes/day. Sean Philips’ *Full Strength* is excellent specifically for men. It’s good for bringing up testosterone levels.
- **Breakfast.** Get food and fats in your system within 20-30 minutes of waking. That sets your blood sugar system up so you can perform better for the day. If you take coffee and no food first thing, or if you eat something sugary and get a glucose spike you’ll be fighting glucose peaks all day.
- **DON’T** eat food that spikes insulin.
- **DON’T** be afraid of desserts, but **DO** understand that it’s better to do a fatty than a high sugar dessert.
- **DON’T** drink a lot (alcohol) prior to bed. You’ll feel like you slept but it won’t be effective sleep. You’ll have spent night detoxing!
- **DON’T** eat too late in the evening. If you do, make it small portions which are easier to process.
- **DO** drink a gallon+ of water per day.
- **DO** eat nutritious food and **DO** go for farm fresh and local.

Will Murray’s five-bite-rule:

Your body’s response to food has a decreasing curve within five bites:

- 1st bite, fireworks.
- 2nd roman candle.
- 3rd bite sparkler.
- 4th lighter at a concert.
- 5th last bite; dessert bite. Amount of pleasure recedes.

Do it right and you’ll respond to that, and then you’ll find that your caloric intake is less but your pleasure is higher.

VI. Lifestyle Recommendations

Formula for guaranteed performance improvement:

- **eat well**
- **sleep well**
- **manage your energy**

Jim Lorer (Tennis/athletic coach) and Tony Swartzch found that energy levels cycle every 90 minutes. We have the tendency to push through these cycles by brute force, but in reality you're shifting your whole physiology down a few levels. So recognize your energy cycles throughout the day and work in harmony with them.

Testimony:

I was 6 years in the Air Force and in tech school. I would take a 10 minute break every hour. During the break I'd compile my notes and take a 4-5 minute nap. I didn't study after class and I didn't do any homework because all the work was done during class. My performance stayed high level during and after. I did Ops Special Investigation (OSI) and Aircraft Technology, which are diverse and complex areas. Meanwhile I'm a high-school dropout. Success was a byproduct of learning new study habits and taking advantage of energy cycles through the day.

To find your optimum body cycles

DO

- Journal.
- Notice when you're feeling performance rise and fall.

DON'T



- DON'T do a power nap at 6pm if you had a decent sleep the previous night
- DON'T “power through” a drowsiness spell midday. Take a nap. It only takes 10-20 minutes to fully recycle your mind if you get into REM sleep.
- DON'T take valerian – causes a guaranteed slowness the next day. Valium is a derivative of valerian root. *Some like it but I think all will have a better experience with, say, 5HTP.*
- DON'T use androgel or any direct replacement for a hormone. They tell the body to shut down its own production.

TO NATURALLY STIMULATE HORMONES

Shower 1 ½ to 2 hours before bed. Do air squats in the shower till failure. The warm water and movement produce good circulation later stimulating great relaxation and sleep.

Men will feel a testosterone rush like when you were 16. You'll wake up fully charged and get morning wood, which is a great indicator that your body's working.

Women will also benefit because the large muscle masses in the body are extremely important in helping to manage and produce hormone levels. All subsystems respond when you bring large muscle masses to fatigue.

Manage your energy levels

- **Work out throughout the day.** Be cognizant of when your body wants to perform physically. Take short breaks and do little workouts through the day every day. 2 sets of 40 pushups.

Pullups. Weights. Balance Ball. Be sensitive to your body for when you're ready to go workout.

- **Binaural Naps.** Take 1-2 short, 10-20 minute “Binaural Audio Naps” during the day using a [binaural sample](#).

Nighttime Rituals

- Journal any unresolved issues. Use a red light (not blue spectrum) if jotting it down in the middle of the night.
- Start your sleep cycle on your back.
- Sync your heart rate by doing breathing exercises.
- Count your heartbeats up and down the breathing cycle.