Q&A Sessions

Huberman Lab Keypoints

Episodes in this pack: 11

AMA #18: Cold Therapy Advice, Skin Health Tips, Motivation, Learning Strategies & More

Date: 2024-08-02 · Duration: 0:56:44
URL: https://www.youtube.com/watch?v=Gf-kC30SLtc

KEYPOINTS

1. Thinning skin with age reflects weakened collagen and elastin plus moisture loss
Answering a 77-year-old listener, Huberman says excess sun categorically ages skin faster. You don't need to burn to raise your skin cancer risk, yet some sun is still needed for vitamin D, circadian rhythm and hormones; just avoid peak UV hours. His tiers run from zero-cost (sun protection, moisturizer) to moderate (collagen, red light) to prescription and procedures.

2. Mineral sunscreens are the least controversial choice
Physical barriers (hat, long sleeves) are undisputed but leave the ears, neck and parts of the face exposed. Zinc oxide and/or titanium dioxide up to about 25% are widely considered safe; if titanium dioxide worries you, use pure zinc oxide, at the cost of a pastier feel. Chemical filters like oxybenzone can reach the bloodstream with heavy use and may be endocrine disruptors. Huberman's stance: occasional use beats no protection, but for frequent all-summer use, choose mineral.

3. Ingesting collagen has moderate evidence for skin elasticity
Studies use 5–30 g a day (most often 15–30 g), often with vitamin C to aid absorption or utilization, and report statistically significant but not dramatic gains in elasticity, smoothness and plumpness. Sources include bone broth and fish or animal powders; plant-based versions are less clear.

4. Red and near-infrared light panels also show moderate benefits
Protocols run about 10–15 minutes a day, at least 5 days a week for a few months. Combining light with collagen might be synergistic, but that hasn't been tested. Retinoids, a dermatologist-supervised prescription option that increases sun sensitivity, are among the best-supported ways to improve collagen.

5. Cold should be uncomfortable enough to make you want out, yet safe to stay in
No systematic study defines the ideal time and temperature. Huberman works in 'walls': getting in, then rapid breathing, with clear thinking returning after about 20 seconds when hands and feet start to hurt. He suggests 1–3 minutes for most people, or 30 seconds if mental resistance is high. A gauge: put your hand in and rate your eagerness from 1 to 10; a 5 or 6 is about right. Novices might start around 55–60°F; he typically uses 45–50°F.

6. Never do breathwork before getting into cold water
Hyperventilating blows off CO2 and blunts the gasp reflex. People who did cyclic hyperventilation before going into water have blacked out and died. Ideally have someone watching who isn't in the water. Calm breathing while in is fine, but don't emphasize exhales and never deliberately submerge.

7. Cold after lifting may blunt gains in some settings, but don't be paranoid
Huberman says cold immersion right after resistance training can limit some strength and hypertrophy adaptations, but there is 'zero evidence' a cold shower after lifting does. His overall advice is to be neither too paranoid nor too obsessive about cold.

8. REM sleep supports learning and strips emotional load from memories
REM is concentrated toward morning, has more vivid, emotional dreams, and occurs with adrenaline essentially unavailable and the body paralyzed (atonia), making it a form of nightly trauma therapy. The first night after learning something matters most. Alcohol and late caffeine disrupt REM, and no drug clearly and specifically increases it.

9. Brief pauses during learning trigger 20–30x speed replay
Papers on music, math, concept and motor learning show that random ~10-second 'micro gaps' let the hippocampus and neocortex replay the material (sometimes in reverse) at 20–30 times normal speed, adding repetitions for free. This mirrors replay during REM sleep. Huberman suggests one to five, or even up to 10, gaps per hour, without phones or reviewing the material during them.

10. Shilajit sits low on Huberman's testosterone list
Shilajit is a Himalayan mineral pitch with many fakes. Studies summarized on Examine include one with 60 participants showing a small testosterone increase, small FSH increases and a slight sperm-quality gain. Because it may raise FSH, he cautions it could disrupt menstrual cycles. Fixing body fat (neither too high nor too low), sleep and training does far more; he says even a 20-minute increase in REM sleep would beat shilajit for testosterone.

EXAMPLES

1. Wendy Suzuki's meditation study
Her NYU lab found about 13 minutes a day of brief meditation improved working memory, other memory, focus and stress. Huberman would start every class with 3–5 minutes of focused 'third eye' meditation, framed as a perceptual exercise of shifting from exteroception to interoception, not mysticism.

2. The $1,000 phone bet
When writing grants in his San Diego lab, Huberman handed over his phone and promised each lab member $1,000 (money he didn't have) if he asked for it back before 5 pm. He also suggests writing a check you can't afford to lose.

3. Self-contracts for his book
Rather than announcing goals, which he says invites premature support that saps drive, he signs a personal contract after each 10–60 minute writing block. He doesn't let himself leave his seat until the timer ends, and after 20–30 minutes he no longer wants to.

4. Sauna practice

Being heat tolerant, he sets a traditional (not infrared) sauna to about 210°F for 10–20 minutes maximum and alternates with the cold plunge. He stresses it doesn't take much to overheat the brain.

OTHER RELEVANT

1. Ways to get more REM

Add 10–30 minutes of sleep in the morning, even via the snooze button. Get an early-day adrenaline surge from morning exercise or a cold shower. Do a 10–20 minute NSDR protocol on waking; he and Matt Walker plan to test whether NSDR mimics REM. Trust REM rebound the next night if you avoid late caffeine and alcohol.

2. What schools could do

Prioritize sleep (later starts, no phones at night), open lessons with brief meditation, insert micro gaps, and schedule physical activity right before learning; catecholamines from exercise aid encoding. Teach students their attention thresholds and watch post-lunch slumps.

3. Start a routine as a closed loop

Write the goal on paper, check off each completion and make the effort itself the reward, drawing on Carol Dweck's and David Yeager's growth-mindset work. Use fear-setting or a cold shower for extra activation, and put your phone in another room or a box.

4. Addiction resources

Huberman points to free 12-step communities, which a Stanford psychiatry study found can be very useful, and to his episode with Dr. Anna Lembke, author of 'Dopamine Nation'. He defines addiction as a progressive narrowing of what brings you pleasure.

LIVE EVENT Q&A: Dr. Andrew Huberman at the Brisbane Convention & Exhibition Centre

Date: 2024-06-07 · Duration: 0:53:08
URL: https://www.youtube.com/watch?v=-e9ErUozQo4

KEYPOINTS

1. Nicotine itself isn't what causes cancer; the delivery method is
Smoking, vaping, dipping and snuffing are the cancer risks. Huberman calls vaping 'bad', probably slightly less bad than smoking, and grants that it has helped some people smoke less. Nicotine acts on nicotinic acetylcholine receptors and is a genuine cognitive enhancer for attention and focus, but it reliably raises blood pressure and constricts blood vessels.

2. Nicotine tolerance builds fast and young brains should avoid it
Because the effect fades with daily use, people need more and more. Huberman says he has never used nicotine. He advises against it for young, highly plastic brains, and suggests adults avoid it unless they really need the boost and can tolerate the rise in blood pressure.

3. ADHD care works best when you combine tools instead of picking sides
Huberman notes that most ADHD drugs (Vyvanse, Adderall, Ritalin) are amphetamines or similar stimulants. They have real clinical value because boosting dopamine and norepinephrine can help the brain practice focus and strengthen those circuits through plasticity. He argues that behavioral, nutritional, supplement and prescription tools can be combined, and that the non-drug tools may allow lower doses for people who want that.

4. Dosing habits for stimulant medications have shifted over time
Huberman says these drugs were originally taken on weekdays only, a pattern that has drifted toward daily use. He notes that few people who respond well ever come off them. There's nothing magical about turning 25, but some people need less over time as their attention circuits strengthen.

5. Focus has to warm up; it doesn't switch on instantly
Huberman argues that visual and mental focus are closely linked, citing visual-target training used in some schools and clinics in China, where children practice holding their gaze on a distant point before starting work. Taking 5–10 minutes to settle into focus doesn't mean you have an attention disorder, any more than needing a warm-up jog means you can't run. He also notes how little science actually knows about 'flow'.

6. Years of short sleep can largely be recovered from
To someone who got about five hours a night for 15 years, Huberman says substantial damage is unlikely unless the pattern lasted a lifetime, and the brain compensates well. He cites Matt Walker's QQRT framework: quantity (needs vary, so seven hours for years is no reason to panic about dementia), quality, regularity (roughly the same bedtime ±1 hour, at least five nights a week) and timing (chronotype).

7. 'Adrenal burnout' is a myth, but psychological burnout is real
Huberman says the adrenals hold enough adrenaline 'for two lifetimes' and don't burn out, though genuine adrenal insufficiency exists and is rare. Burnout tends to arrive months after the stressful period, not during it, and is often followed by depression. His suggestion is rest plus actively seeking things that bring delight or meaning, drawing on poet David Whyte's idea of wholeheartedness.

8. Eating minimally processed foods may help appetite match real nutrient needs
Huberman's hypothesis is that when foods are eaten close to their original form, the brain can link taste with the macronutrient and micronutrient content the gut is sensing, so cravings become more specific. He points to emerging work by Dana Small at Yale and Kevin Hall. He thinks this may be why some people feel better on elimination diets such as carnivore: those diets may reset the circuits that drive appetite.

9. Breathing patterns change heart rate in predictable ways
Through respiratory sinus arrhythmia, inhaling speeds the heart slightly and exhaling slows it. Vigorous cyclic hyperventilation (Wim Hof or tummo breathing) increases arousal and adrenaline. Exhale-weighted patterns such as cyclic sighing calm you down. Box breathing, with roughly equal inhales and exhales, keeps heart rate even. In short: lengthen inhales to feel more alert, lengthen exhales to feel calmer.

10. Testosterone replacement is often started too young
Huberman distinguishes true replacement (levels below about 300 ng/dL, or clinical symptoms) from what he calls 'testosterone augmentation therapy' in men whose levels are already normal. TRT sharply lowers sperm count, so men who may want children need something like hCG to offset it. He notes that women have more testosterone than estrogen in their blood, though less than men.

EXAMPLES

1. The Nobel laureate who chewed six pieces of nicotine gum in 30 minutes
During a meeting at Columbia, a scientist then in his late 70s told Huberman he chewed Nicorette to ward off Parkinson's and Alzheimer's, possibly via acetylcholine activation and preservation of dopamine neurons. Huberman presents this as intriguing, not as a recommendation.

2. From one Zyn pouch twice a week to a canister a morning in a month
Huberman's example of someone he knows, used to show how quickly tolerance to nicotine builds.

3. Waking after four hours and using NSDR to get back to sleep

Huberman says he often wakes about four hours into the night and has learned to fall back asleep with non-sleep deep rest (yoga nidra). He did a 20-minute session right before going on stage, and points to free 10-minute versions online.

4. Huberman's own eating pattern

Water and caffeine early, a first meal around 11 am–noon, and eating mostly between 11 am and 8 pm, though he isn't strict about it: meat, fish, eggs, fruit, vegetables, rice and plenty of oatmeal, with extra starchy carbs after hard resistance training.

5. Fatal mix: hyperventilation plus breath holds in water

Hyperventilating blows off carbon dioxide, which is what triggers the urge to breathe, so you can black out underwater without warning. Huberman says never to combine cyclic hyperventilation and breath holds anywhere near water, 'even standing or seated in a puddle'.

OTHER RELEVANT

1. Minimal plan for a busy schedule

Get bright daylight every day, even through clouds. Use dim or red light in the evening (he travels with a simple red bulb). If you train only two days a week, include resistance training. Andy Galpin's 'exercise snacks' (about 60 seconds of near all-out effort, such as stair runs or jumping jacks) can carry over to measures like VO2 max.

2. A sequence to follow before considering TRT

First sort out sleep, exercise, nutrition and stress, and avoid overtraining. Then consider supplements such as zinc or tongkat ali, whose effects are debated. Only then, if it fits your ethics and sport rules, use the minimum effective dose and protect fertility. He warns that growth-hormone-raising peptides grow all tissues, including undetected tumors.

3. Morning light for children too, with care

Low-angle morning and evening sun has less UV, but no one should stare at the sun. Kids can sleep in; the problem is staying indoors on a phone until noon.

4. Parenting ideas from Dr. Becky Kennedy

Set boundaries so children feel safe, help them feel 'real' (seen), and respond to their feelings with 'I believe you' without having to grant the request. Avoid 'impinging' on their healthy, distinctive interests, such as forcing violin on a child who wants drums. Teach stress tools like the physiological sigh early.

LIVE EVENT Q&A: Dr. Andrew Huberman at the Sydney Opera House

Date: 2024-04-19 · Duration: 0:52:53
URL: https://www.youtube.com/watch?v=GA89kjVY6Ik

KEYPOINTS

1. What you believe about stress shapes how your body responds to it
Huberman's top recent stress finding is Alia Crum's mindset work at Stanford. Students who watched a five-minute video on how stress harms the immune system and other systems responded one way; those who watched an equally accurate five-minute video on how stress boosts energy, cognition and memory responded in line with that. The 'stress-is-enhancing' mindset comes from learning true facts, not from lying or placebo.

2. The anterior mid-cingulate cortex seems to grow when you do hard things
Josef Parvizi at Stanford stimulated this region in neurosurgery patients. One said he felt he was 'heading into a storm' but ready to lean in; another felt about to get up and do something really difficult. Studies over the last 3–5 years suggest people who overcome fitness or cognitive challenges show more baseline activity there, and those who fail show less. The benefit appears to generalize, so Huberman urges deliberately seeking psychologically and physically safe challenges alongside comfort.

3. Your perceived 'frame rate' of time depends on where you look and how aroused you are
Close-up focus, like a phone or a watchmaker's bench, and rising autonomic arousal (waiting on a text or an Uber) slice time finely. Looking at distant or unpredictable scenes like clouds, waves or rustling trees widens the time bins. High frame rate suits implementing ideas; lower frame rate and panoramic gaze suit generating them.

4. Chemicals and sound also shift time perception
Psychedelics distort time largely by deploying serotonin, which is tied to clock-perception mechanisms. Caffeine shifts frame rate in the predictable direction, and alcohol and cannabis shift it too, which he notes without recommending them. He suggests 40 Hz tones may help with logical, if-then work by entraining certain circuits.

5. For jet lag, the decisive variable is light relative to your temperature minimum
Your temperature minimum is roughly two hours before your natural wake time (about 4 am if you wake at 6). Bright light to the eyes in the 2–3 hours before it delays your clock by about an hour; light in the 2–3 hours after it advances it. Midday sun is a 'circadian dead zone' for shifting the clock, though good for mood. Afternoon light partially offsets morning light, which is why daily morning sun doesn't make you rise ever earlier.

6. Food, activity and social rhythms help, but light is the 'heavy hammer'
Eating on the local schedule works because food is another zeitgeber (timekeeper). For the first three days in a new place, ask what time your body thinks it is back home. Then seek or avoid light accordingly, using sunglasses and a brimmed hat when you don't want to shift.

7. Psilocybin and MDMA work differently, and Huberman says caution is essential
Psilocybin resembles serotonin, binds a specific serotonin receptor almost selectively and increases resting-state lateral connectivity between brain areas. MDMA (an empathogen) raises serotonin and dopamine, but the serotonergic effect appears to drive most of its therapeutic value. Huberman joined a psilocybin trial and an MDMA trial as an adult and found the psilocybin sessions 'absolutely terrifying' but insightful. He doesn't recommend them outside qualified clinical settings and notes they remain illegal in the US.

8. Their value is feeling and reflecting at the same time
Talk therapy rarely catches an issue at full emotional amplitude. Psychedelics and MDMA let people feel it fully while, with a guide, reflecting and taking notes toward actionable outcomes. He suggests trauma involves unconscious confusion about who was responsible, and MDMA's self-empathy may short-circuit that.

9. Warming up before bed helps you cool down and sleep
To fall asleep, core temperature must drop by about 1–3 degrees. Heating the body's surface with a sauna, hot bath or even warm water on the face and hands prompts the medial preoptic area (the brain's thermostat) to cool the core afterward. He quotes Matt Walker: 'warm up to cool down to fall asleep, stay cool to stay asleep, warm up to wake up.' Cold exposure does the reverse, eventually raising core temperature.

10. Repeated stress usually triggers less adrenaline, unless it matters to you
The amygdala is better seen as a novelty detector than a fear center. A repeating alarm during the show triggered less response each time. Huberman's bet is that a meaningful, worsening stressor, like someone you can't stand who lowers your life satisfaction, would instead escalate the response.

EXAMPLES

1. David Goggins running to the airport
When they first met in 2016 in Silicon Valley, Goggins changed into shorts and ran about 14 miles to the airport with his bags. Huberman uses him, alongside Rick Rubin, as an example of people who simply do what they believe is right.

2. The Abu Dhabi meltdown
On a 12-hour shift from the Bay Area in 2017, Huberman slept well the first night, then barely slept for two days and was 'crying' and 'a wreck', which is why he takes jet lag protocols seriously.

3. The 'LDS MDMA' studies
He cites research on members of the Church of Latter-day Saints, a population that avoids other drugs, who had taken from one to over 100 doses of MDMA. Apart from a mild attention deficit in heavy users, few cognitive deficits and no apparent

neurotoxicity were found. He also notes an older neurotoxicity paper was retracted because subjects had been given methamphetamine. He still warns of possible toxicity with frequent use.

4. Eddie Chang's foot-tap trick

When Huberman's forceps jiggled during retinal microsurgery, the UCSF neurosurgery chair advised tapping a foot. Rhythmic movement elsewhere bleeds off excess anticipatory 'go' activity in the basal ganglia. Huberman tells a leg-bouncing audience member that moving may help them focus too.

5. The friend in the cold plunge

A straight-edge friend went from one minute to three to 45 minutes naked in a cold plunge. Huberman's response: easy does it. Cold and heat are powerful stimuli, so use the minimal effective dose.

OTHER RELEVANT

1. Use red light in the evening

About half an hour before bed, switch to a cheap red party light instead of overhead lighting; Huberman says it is known to reduce cortisol compared with other lighting. He notes Rick Rubin's house uses only red light after sundown.

2. Reset with a low-frame-rate break

Five or six minutes watching an aquarium livestream, clouds or water slows your time perception before you return to high-frame-rate work like typing or texting.

3. Finding your passion (advice to a 17-year-old)

Look back for a remembered 'yum, behold' feeling state from a time you weren't thinking about parents or status. The feeling may not belong to the activity itself. Treat others' feedback only as calibration points pointing back toward that feeling.

LIVE EVENT Q&A: Dr. Andrew Huberman Question & Answer in Chicago, IL

Date: 2023-12-13 · Duration: 0:54:44
URL: https://www.youtube.com/watch?v=LRM5LutB538

KEYPOINTS

1. Brain health in later life rides on vascular health
Asked by someone about to turn 70, Huberman's answer was the one he gives everyone: the brain is a heavy fuel consumer, so whatever keeps arteries and capillaries clear helps it. Borrowing from Peter Attia, he cites about 150 to 200 minutes per week of zone 2 cardio, movement at which you can just barely hold a conversation, plus resistance training two or three times per week for everyone.

2. Load-bearing exercise and strength may protect cognition
Load-bearing movement releases hormones from bone that cross the blood-brain barrier and may support neurons in areas such as the hippocampus. He flags that this extends mostly animal data to humans, with some human data emerging. He mentions a new paper from Andy Galpin's lab and collaborators correlating cognitive health with strength, and notes that weakening grip and growing left-right grip asymmetry track with cognitive decline.

3. Fine control of the extremities is a marker of nervous-system health
Floppy feet and an inability to extend or spread the toes are among many correlates of dementia. Newborns are tested for the Babinski reflex for the same reason. Huberman, who has broken one foot several times, has been using a toe spreader: painful at first, but improving toe spreading gives more foot stability and pain-free movement.

4. For shift workers, consistency and light matter most
Shift work is bad for a diurnal species, and swing shifts that keep changing are the worst, so try to keep one schedule for at least two weeks. To wake up, get bright light in your eyes, sunlight or artificial, mainly because it acutely suppresses melatonin. He prefers an inexpensive 900 lux LED over costly daylight simulators.

5. Sleep when you can if the schedule is chronic
For a long-term pattern such as a firefighter's 24 hours on and 48 off, or new parenthood, grab whatever sleep you can. For a one-off disruption such as a trip to Europe, there is no need to maximize sleep; stay with the local schedule instead.

6. Hypnosis combines narrow focus with deep relaxation
Drawing on Stanford psychiatrist David Spiegel's work, Huberman describes clinical hypnosis as self-directed rather than stage hypnosis. Normally plasticity requires intense focus followed later by deep rest; hypnosis marries the two states, which may speed neuroplasticity. In highly hypnotizable people, success rates for smoking cessation and pain relief are impressive. He wishes it had a better name, the same reason he rebranded yoga nidra as NSDR.

7. Psychedelics likely work by shifting neuromodulators, and the risks are real
Rewiring ultimately comes from shifts in dopamine, serotonin, norepinephrine and acetylcholine. Psilocybin is structurally very similar to serotonin and activates specific serotonin receptors; roughly 12 to 20 good-sized trials at places such as Johns Hopkins, UCSF and Switzerland suggest benefits for treatment-resistant depression, done with preparatory and integration sessions. An open question is whether the subjective trip matters or only the serotonin. He calls microdosing data unconvincing, MDMA-assisted therapy for PTSD more robust, and says kids should absolutely not use psychedelics, nor anyone predisposed to bipolar disorder or schizophrenia.

8. Meditation sharpens focus but can disrupt sleep near bedtime
Wendy Suzuki's work shows 10 to 13 minutes of daily meditation improves memory and focus. Footnotes in those papers indicate meditating close to bedtime can impair sleep, because meditation is a focusing exercise. For trouble sleeping, including falling back asleep in the middle of the night, he recommends NSDR instead.

9. NSDR can partly offset lost sleep, though Matt Walker disagrees
Walker would say nothing replaces sleep. Huberman's read is that 10 to 20 or 30 minutes of NSDR each morning after a short night restores some of the lost feeling of wakefulness. A study with the Stanford sleep lab is underway, and some military units that cannot sleep rely on such tools, though they would prefer 8 to 10 hours of sleep.

10. Daylight saving time is anti-biology
Citing chronobiologist Samer Hattar at the NIMH, Huberman says the time change increases car crashes, heart attacks and depression, and that claims it reduces evening crime are unsubstantiated. View low-angle morning and evening sunlight, which the Stanford ophthalmology chair confirmed carries little cataract or macular risk, longer on cloudy days, or use artificial light.

EXAMPLES

1. Richard Axel's nicotine gum
Visiting the Nobel laureate at Columbia, Huberman watched him chew at least five pieces of Nicorette in a short meeting, because nicotine's cholinergic and dopaminergic effects may protect against Parkinson's and Alzheimer's. Huberman does not recommend it, noting it raises blood pressure and causes vasoconstriction.

2. The Spiegel eye-roll test
Hypnotizability is assessed by looking upward and closing the eyelids while keeping the gaze up. Upward gaze is linked to alertness and downward gaze plus lid closure to drowsiness, so people who can hold both, showing the whites of their eyes, can be very awake and very relaxed at once.

3. Yoga nidra at an addiction and trauma center
Huberman first encountered yoga nidra in 2017 at a Florida recovery center whose therapist has clients do 30 minutes,

eventually an hour, each morning, waking an hour early to use the liminal state between sleep and wakefulness.

4. Non-protein amino acids as a next frontier

He predicts more attention to non-protein amino acids found in high density in seeds and nuts. The late Stanford scientist Ed Rubenstein hypothesized that, consumed in abundance and perhaps especially in liquid form, they might incorporate into human proteins and cause misfolding linked to neurodegeneration. Huberman labels this speculation and says seed oils are not inherently bad once calories are accounted for.

OTHER RELEVANT

1. Advice for a 19-year-old's hyperplastic brain

Learn how you learn, focus and rest. Stress and focus are fine as long as you can sleep well and fall back asleep. Have a cardio and a resistance activity you enjoy, a self-awareness practice such as journaling or meditation, and people you like around you. Learn an instrument, which improves broader learning even later in life, and do not worry that plasticity ends at 25.

2. Trust your early sense of right and wrong

Rereading his old journals, Huberman finds he often knew better all along even when he did not act on it. Avoid rigidity about protocols, and do not spend years trying to resolve relationships with people you simply did not like.

3. Cannabis cautions

He does not demonize cannabis and acknowledges clinical uses, but very high-THC products can be a problem, especially for people predisposed to psychosis. For anyone claiming it is not addictive, he suggests stopping for a week and noticing sleep and mood.

4. What education should add

He would teach children early how the brain and body work and give them zero-cost levers for stress, sleep and nutrition, and for avoiding social isolation.

AMA #9: Kratom Risks, Does Infrared Sauna Work & Journaling Benefits

Date: 2023-07-28 · Duration: 0:26:32
URL: https://www.youtube.com/watch?v=HoH93judXmE

KEYPOINTS

1. The free portion of this AMA is entirely about kratom
Huberman devotes the publicly released first 20 minutes to one question: what are the short- and long-term effects of kratom? The infrared-sauna and journaling questions in the title are answered in the subscriber-only remainder, so these notes cover kratom only.

2. Kratom is a plant-derived opioid sold over the counter
Kratom comes from the Mitragyna speciosa tree, native to Indonesia. For at least a couple of hundred years, people have chewed its leaves for a mild stimulant effect. Today, concentrated extracts are sold as supplements, mostly in capsules and sometimes as raw powder, without a prescription in the US. Low doses feel mildly stimulating and euphoric. Higher doses act as a painkiller and sedative, which is the classic opioid profile.

3. It acts mainly on the mu-opioid receptor, like morphine
Huberman rejects the claim that kratom is fundamentally different because it hits kappa receptors while morphine and hydrocodone hit mu receptors. Kratom binds preferentially to the mu-opioid receptor, and somewhat to kappa, in places including the brainstem and the periaqueductal gray, which produces pain relief and mild euphoria. The proof: pretreating people with a mu-receptor blocker eliminates all of kratom's effects, even the mild low-dose stimulation. 'You likely like kratom because it's an opioid.'

4. It does engage reward circuitry, despite claims otherwise
Proponents say kratom doesn't trigger dopamine and so can't be addictive. Huberman says that's untrue. Mu-receptor activation indirectly recruits reinforcement circuits involving both dopamine and serotonin, the same route by which other opioids become habit-forming.

5. Kratom is habit-forming and addictive at euphoric doses
Above the low, mildly stimulating range, users clearly develop tolerance, escalating doses and withdrawal. Huberman defines addiction as continuing despite negative consequences, and more broadly as 'the progressive narrowing of the things that give you pleasure.' When he asked about kratom on social media, one camp described severe addiction, including people who needed rehab and developed other addictions.

6. Some people use it to taper off stronger opioids, with conditions
The other vocal camp credits kratom with getting them off morphine, oxycodone or hydrocodone. Physicians Huberman respects reconciled the two views. Avoid kratom if you can, but if the choice is between addiction to potent opioids and using kratom to taper off them, kratom is preferable only if the person commits to lowering the dose and eventually stopping. Anyone dependent on opioids should plan this with their physician.

7. Doses aren't comparable across products
You'll hear that 1–5 or 1–6 g per day keeps people out of the addictive range, but those grams refer to whole kratom, not its individual alkaloids. Brands differ widely in alkaloid ratios, and the alkaloids differ in how strongly they hit the opioid system, so 1 g of one product isn't equal to 1 g of another. Some users deliberately seek high-alkaloid products that hit the mu receptor hardest.

8. Individual response varies enormously
Huberman cites estimates that somewhere between 10% and 40% of people respond to opioids especially strongly and 'really like them,' though the studies are incomplete. He is the opposite. Post-surgery Vicodin makes him nauseous, and he would rather endure pain. He compares this to the 8–10% of drinkers who get an unusually large dopamine response to alcohol and face high risk of alcohol use disorder. Strong responders should never start kratom.

9. Death is rare but respiratory suppression is the danger
Kratom's potency is roughly one-sixth that of hydrocodone, and it isn't known to suppress breathing at low to moderate doses. Combined with other opioids or alcohol, or at escalating doses, it can. Huberman draws on Jack Feldman's research showing that opioids bind brainstem sites that generate the spontaneous physiological sighs that reinflate the lungs during sleep. Suppressing those sighs is a major way opioid deaths happen. The scant data suggest kratom-related deaths share this mechanism, often alongside other substances.

EXAMPLES

1. Robert Malenka's rule
Huberman repeats the point made by Stanford addiction researcher Dr. Robert Malenka: 'It is impossible to get addicted to a substance that you've never consumed.' This is the basis for his advice that anyone who hasn't tried kratom shouldn't.

2. The 'I'm not addicted' test
Huberman describes heavy users who deny dependence but become anxious at the idea of going a week without kratom. He sees the same pattern in cannabis users who refuse a 10-day break, and says this reluctance and the withdrawal that follows are telling.

3. Why 'less bad than X' is a weak argument
Huberman rejects the logic that because kratom is gentler than morphine, or cannabis gentler than alcohol, it's therefore good. He asks that each substance be judged on its own benefits and risks. He is balanced on cannabis, for example, but warns young males predisposed to psychosis away from high-THC products.

4. Runner's high as the body's own opioid

Long, repetitive effort releases endogenous opioids that bring pain relief, mild euphoria and a 'sheen' on the world. Morphine and kratom mimic this system at much higher potency, with more sedation and dreaminess.

OTHER RELEVANT

1. If you've never taken kratom, don't start

Huberman's bottom line is to avoid it entirely, especially if opioids have ever felt unusually good to you.

2. If you already use it, watch dose creep and product type

Notice steadily rising intake, switching to higher-alkaloid products, or resistance to a short break. Never combine kratom with alcohol or other opioids, because of the respiratory risk.

3. Treat it as a supplement category apart

Huberman's general order is behaviors, then nutrition, then supplements only if needed. Opioid-acting supplements make him 'nervous' because of their abuse and addiction potential and lack of regulation.

AMA #8: Balancing Caffeine, Decision Fatigue & Social Isolation

Date: 2023-06-23 · Duration: 0:25:20
URL: https://www.youtube.com/watch?v=FE0lTEUa7EY

KEYPOINTS

1. The free portion of this AMA covers only the daily-caffeine question
Huberman spends the publicly released first 20 minutes on one listener question: is there a net benefit to drinking caffeine every day, and how do you know if it suits you? The decision-fatigue and social-isolation questions in the title are answered in the subscriber-only remainder, so these notes stick to caffeine.

2. For most adults, daily caffeine is fine with two conditions
For people roughly 18–20 and older, Huberman says daily caffeine 'is not going to be a problem' as long as it doesn't cause anxiety or panic attacks and doesn't disrupt nighttime sleep. He's aware of no drawback to daily intake beyond those, and points out that some evidence suggests caffeine can increase dopamine receptors, which may explain its mood-lifting effect. He calls those human reports 'scattered.'

3. Stop caffeine 8–12 hours before bed, even if you can fall asleep anyway
Because of caffeine's half-life, a 3–4 p.m. coffee followed by a midnight bedtime still degrades sleep architecture, reducing both slow-wave deep sleep and REM sleep. Together, those two stages largely determine how alert and sharp you feel the next day. Huberman admits he sometimes has a late-afternoon coffee and says not to obsess over an occasional one, just don't make it a habit.

4. Caffeine works by blocking adenosine, and the crash is adenosine catching up
Adenosine builds up the longer you're awake and creates sleep pressure. Caffeine occupies adenosine receptors. When it unbinds, the adenosine that accumulated in the meantime floods the vacant receptors, which produces the crash. With an estimated 90% of adults worldwide drinking caffeine daily, Huberman calls it the most popular drug on the planet.

5. Daily users mostly drink caffeine to feel normal, not enhanced
Caffeine does improve learning, memory, energy and stamina in studies. But those studies typically use either caffeine-naive people or habitual users who abstained for 4 days to 2 weeks and were tested in a foggy, low-energy withdrawal state. So caffeine enhances performance relative to the uncaffeinated state. For a habitual user, the usual dose just restores baseline, and only intake above that baseline produces a real boost.

6. Typical doses vary widely by cup and person
Most people tolerate 100–300 mg, depending on body weight and tolerance. Huberman says a 'typical' cup doesn't exist: a 6–8 oz coffee might contain 100 mg (weak) to about 300 mg, and very strong brew or an added espresso shot can push it to 400–500 mg. Some people are so sensitive that even decaf or chocolate makes them jittery, sweaty or gives them palpitations. He says they lose nothing health-wise by avoiding caffeine.

7. Children under about 14 should avoid caffeine where possible
Huberman notes there's little evidence for the claims that caffeine stunts growth or leaches calcium from bones. Still, as a former developmental neurobiologist, he dislikes the idea of a wiring brain being 'bathed in an adenosine receptor antagonist.' Small amounts, as in some chocolate, are probably fine, but energy drinks, soda, coffee and tea are 'a bad idea' for children under 14. For ages 15–18 or 20 the risk is probably lower, but limiting intake is still advantageous.

8. Energy drinks add theanine and L-tyrosine, which makes high caffeine easier to keep drinking
Some energy drinks carry 200–800 mg of caffeine, and many now add L-tyrosine (a dopamine precursor) and theanine. Theanine takes the edge off jitters, which Huberman calls a 'trick' that lets people keep drinking without feeling overstimulated. He suggests leaving these ingredients to adults over 18 and getting caffeine from a 'clean source' like plain coffee or tea, knowing what each ingredient does if taken chronically.

9. A one-day spike above baseline brings a next-day crash, so don't chase it
Whatever your baseline is (0, 200 or 400 mg), doubling it gives a strong lift followed by a lethargic, slightly low day, which Huberman ties to dopamine- and adenosine-receptor changes. The mistake is to keep drinking the higher amount and reset your baseline upward. Instead, get through the crash day with extra sunlight and movement, then return to your usual amount. Expect mild withdrawal lasting about 24–48 hours.

EXAMPLES

1. The listener whose caffeine stopped working
The questioner found that after a few weeks of daily caffeine they had poor sleep, low appetite and anxiety. Without it, their meditation and mindfulness improved, but they felt lethargic and unmotivated. Huberman calls this the classic pattern of overuse (not abuse, which he reserves for things like large doses of caffeine pills) plus withdrawal.

2. Huberman's own habit
He has drunk caffeine since his teens, mostly as brewed, unflavored yerba mate, plus black coffee, espresso or Americanos. He warns to avoid smoked yerba mate, which can be carcinogenic. He usually delays his first caffeine 90–120 minutes after waking to avoid an afternoon crash.

3. The sick-week confound
The last time Huberman went 4–7 days without caffeine was while ill. He wonders whether part of his malaise was withdrawal, since he felt much better on resuming coffee, but concedes the recovery from illness coincided, so 'it's not a good experiment.'

4. How caffeine studies are usually built

Researchers take chronic users, impose 4 days to 2 weeks of abstinence (bringing headaches, fog, malaise, sometimes mild depression), then give caffeine and test cognition or physical output against that low point. Alternatively, they test people who never use caffeine. Both designs show gains, which is why the benefits look bigger than a daily drinker experiences.

OTHER RELEVANT

1. Reset protocol: halve, pause, then live on the half dose

Cut intake by about 50% for 3–4 days (for example, 4 oz of coffee plus 4 oz of decaf instead of 8 oz of coffee), then take 1–2 full days off. Those days will feel far easier than quitting cold turkey. Then resume at the half dose as your new baseline, and use your old full dose only occasionally when you want a real performance boost.

2. Slower alternative: taper 10–15% per day

If you prefer, reduce volume or concentration by about 10–15% per day over 4–7 days. Huberman notes most people lack the patience for this and that eyeballing amounts is fine unless you use pills.

3. Morning timing

Delay your first caffeine to about 90 minutes after waking, or 90–120 minutes if you get afternoon crashes, and keep it 8–12 hours away from bedtime.

4. Who should simply skip it

Very caffeine-sensitive adults and children under about 14. Teens should keep their total intake low, especially from energy drinks.

AMA #5: Intrusive Thoughts, CGMs, Behavioral Change, Naps & NSDR

Date: 2023-03-24 · Duration: 0:23:26
URL: https://www.youtube.com/watch?v=cp9GXl9Qk_s

KEYPOINTS

1. The public portion covers one question: how to 'abstain' from addictive thoughts

This AMA's title also lists CGMs, behavioral change, naps and NSDR, but only the first answer is publicly available. It deals with intrusive thoughts and narratives. A listener noted that Huberman had planned to ask Dr. Anna Lembke how to abstain when your 'drug of choice' is a thought rather than a substance or behavior, and that the conversation moved on before he did. This episode is his answer.

2. Lembke's 30-day reset works for substances and behaviors, but you can't go cold turkey on a thought

Lembke, who directs Stanford's dual-diagnosis addiction clinic and wrote 'Dopamine Nation', prescribes 30 days of abstinence to reset dopamine reward pathways for most substance and 'process' addictions, such as social media, video games, sex and food. Huberman notes the exceptions. You can't abstain from food. People with severe alcohol or opioid dependence can be at risk of dying if they quit abruptly, so they need a physician. Thoughts need a different approach entirely.

3. First, separate true OCD from being 'particular'

In clinical OCD, performing the compulsion doesn't reduce the obsession. It makes it worse: more hand-washing, more anxiety. Someone who is fastidious or exercises for two hours and then feels calm all day doesn't have the disorder. If the behavior grows, intrudes and degrades quality of life, it may. Huberman's advice: if it's classic OCD, see a psychiatrist. Effective tools exist, and they don't always mean medication.

4. What a thought is

Huberman lists sensations (converting light, sound, pressure or chemicals into neural signals), perceptions (your interpretation of them), emotions and actions. Thoughts are a fifth, looser category: internally generated perceptions that mix past, present and future. Thoughts run in the background as semi-structured 'chatter' and become structured when something external, like a question, demands it.

5. Two kinds of unwanted thoughts need opposite strategies

Some thoughts are merely intrusive and repetitive, like a song stuck in your head or replaying an event that isn't upsetting. Others are intrusive and disturbing, such as recounting a harm, something you witnessed, or a sense of having been wronged. Huberman says the two answers diverge sharply.

6. For repetitive but neutral loops, anchor attention outward

Get into actions and activities that pull your attention to the environment. The loop may keep running in the background at first but should fade as you practice focusing elsewhere. He recommends 5–10 minutes a day of eyes-closed meditation focused on breath or the area just behind the forehead. He calls improved focus perhaps the best-supported benefit of meditation, citing Dr. Wendy Suzuki's work at NYU and his own lab's studies.

7. For disturbing thoughts, move toward them, not away

Huberman treats disturbing intrusive thoughts as trauma-like. He uses Dr. Paul Conti's definition of trauma: an event that changes how your nervous system works so that you function less adaptively afterwards, which means not every bad experience is a trauma. Counterintuitively, the evidence says to get very close to the narrative around the trauma, ideally with a well-trained therapist, without re-exposing yourself to the event itself.

8. Write it out in detail, in complete sentences

Disturbing thoughts tend to be fragmentary and nebulous. Scripting the thought and its context on paper, in a structured way, reduces both its emotional load and its frequency over time. Some people feel relief after one session, while others need several. The goal is to turn a story that hijacks your nervous system into a known, repetitive, 'old boring story'. He contrasts this with both the outward-anchoring strategy and Lembke's 30-day abstinence model, calling it essentially your own form of trauma therapy, and stresses that the data favor getting close to the specific details.

EXAMPLES

1. Huberman's knock-on-wood superstition

In college he developed a habit of saying and knocking 'knock on wood'. When he suppressed the knocking out of embarrassment, it moved into his head as a silent mental ritual. The more he did it, the more he wanted to, which he calls 'OCD' in air quotes. What worked was writing down the worst possible outcome he feared, getting close to what the thought was really about.

2. The exercise example

Two hours of morning exercise that leaves someone calm all day isn't a disorder. Two hours that leaves them unable to concentrate, with growing and intrusive urges to exercise more, starts to fall under the umbrella of a true disorder.

3. Structured vs. unstructured thinking

Huberman says that if his idle thoughts were broadcast while he walked around, they'd be a mix of half-sentences and gibberish. When a friend stops him to ask about his day, his thinking becomes organized around their question and his memory. That shift is what outward anchoring uses.

4. REM sleep and emotional load

Huberman adds that sufficient rapid eye movement (REM) sleep is important for removing the emotional charge from traumatic experiences and intrusive thoughts, and points to his free sleep episodes and toolkit.

OTHER RELEVANT

1. A three-step triage

First, is it classic OCD? If so, see a psychiatrist. Second, if the thoughts are only repetitive, build focus through engaging activity and short daily meditation. Third, if they're disturbing, journal about them in detail, repeating until the emotion fades.

2. Don't try to suppress

Suppressing a behavior can push it into thought, as Huberman's superstition shows. Structure and attention work better than willpower against a thought.

3. Protect sleep while you do this work

Prioritize total sleep and REM sleep, since REM helps reduce the emotional charge of memories.

AMA #4: Maintain Motivation, Improve REM Sleep, Set Goals, Manage Anxiety & More

Date: 2023-02-24 · Duration: 0:23:13
URL: https://www.youtube.com/watch?v=S8nPJU9xkNw

KEYPOINTS

1. The public portion of this AMA answers one question: how to keep motivation steady
This is a premium Ask Me Anything episode, and only about the first 15 minutes are free. In that section Huberman answers a listener, Martin, who swings between weeks or months of very high motivation, with side projects and music, and stretches of barely functioning and seeking short-term entertainment. He asks how to even out those extremes. The other topics in the title belong to the subscriber-only remainder.

2. Back on your heels, flat-footed or forward center of mass
Huberman borrows a mental image from a friend who served in special operations, then worked in finance and now in health and wellness. In any area of life you're either back on your heels (struggling), flat-footed (doing okay) or forward center of mass (tackling things and feeling in control). The goal isn't to stay maximally forward all the time, but to avoid crashing back onto your heels.

3. Dopamine governs willingness to put in effort, more than pleasure itself
Animal and human experiments show that people can still experience pleasure with very low dopamine. What disappears is the willingness to work toward any goal. Adequate dopamine supports effort. Excessively high dopamine, as in the manic phase of bipolar disorder, makes every idea seem like a great one, with so much energy that people stop sleeping.

4. Think of baseline dopamine as a wave pool
Using an analogy from Dr. Kyle Gillett, Huberman describes the pool's depth as your baseline dopamine reservoir and the waves as bouts of motivated pursuit. Waves that are too big, from too much excitement or too long at full drive, slosh water out and lower the reservoir. That depletion is what shows up as the low-motivation phase.

5. Refilling from empty takes far longer than topping up
Huberman describes an asymmetry: once the reservoir drops past a certain point, it takes much more sleep and rest to restore it than if you had topped it up from partial depletion. The common mistake is to push until exhausted and only then start using recovery tools.

6. Big peaks are followed by a lower baseline
Citing Dr. Anna Lembke and her book Dopamine Nation, Huberman explains that after large dopamine peaks, baseline drops below where it started, as if the pool got deeper and emptier at once. It then takes much longer to refill.

7. Stacking stimulants turns waves into tsunamis
None of these is bad on its own: caffeine (which increases dopamine receptor availability), favorite music, L-tyrosine, a workout, time with friends. Layering them repeatedly creates big peaks and a crash within hours or days. Huberman warns strongly against leaning on Adderall, Ritalin or illegal stimulants to fight low motivation, because their potent dopamine release depletes the reservoir further.

8. Celebrate, but expect a lull
Weddings, a birth, big anniversaries or a great sports outing with friends are worth enjoying fully. Huberman says to expect a dip afterward, 'not full-blown depression', unless you use tools to replenish. Likewise, you can combine caffeine, L-tyrosine, music and a workout sometimes, just not every day for more than a few days in a row.

EXAMPLES

1. Danish NSDR and yoga nidra studies
Huberman cites two studies from Denmark. In one, a yoga nidra practice of 30–60 minutes produced what he calls dramatic increases in striatal dopamine; he adds that newer data suggest benefits from as little as 10 minutes. A 2011 paper from the same group, 'Dopaminergic Stimulation Enhances Confidence and Accuracy in Seeing Rapidly Presented Words', found the practice also restored confidence and performance on a cognitive task.

2. Mucuna versus L-tyrosine
Huberman describes Mucuna pruriens as 99% L-DOPA, the dopamine precursor. He doesn't necessarily recommend it, because it tends to produce intense drive followed by a crash. He calls L-tyrosine milder, but says behavioral tools should come first.

3. Robert Knight's career advice
In graduate school, neurologist Robert Knight, then at UC Berkeley, told Huberman, who was about to go fishing, that the key to a demanding career is to figure out how many hours of real work a day you can do consistently, five days a week. Apply that number over and over, and update it every four or five years. As you get better, you do more potent work in less time, so the number usually goes down, not up.

4. The strength-training parallel
Huberman connects Knight's advice to one school of training. As people get better at controlling muscle contractions, or at stride and breathing in endurance sports, they can generate more adaptive stimulus per session and may train less, not more. Beginners can't get much done in a short time; experts can. Huberman admits he worked 'pretty insane' hours and even lived in his lab as a junior professor, which he doesn't recommend.

OTHER RELEVANT

1. Protect sleep as the main refill

Quality sleep with enough slow-wave and REM sleep (six hours for some, eight or more for others) is when the reservoir replenishes. Aim for good sleep on 80% or more of nights, supported by morning sunlight and avoiding artificial light at certain night hours.

2. Do NSDR daily, before you're depleted

Use a 10-minute non-sleep deep rest (NSDR) or yoga nidra session at any time of day, or 20–60 minutes if you have time, including if you wake in the middle of the night. Huberman stresses it isn't meditation: most meditation is a focus exercise, whereas NSDR restores energy and may help recover lost sleep. Free scripts are easy to find on YouTube.

3. Build a five-day neurobiologically consistent routine

Rather than a rigid schedule, keep consistent sleep, daily NSDR and controlled dopamine peaks for at least five days a week, along with good nutrition and social connection. Huberman says this produces a much more even pattern of focus and motivation. He calls it an art and a practice, not something to get perfect the first time.

LIVE EVENT Q&A: Dr. Andrew Huberman Question & Answer in Los Angeles, CA

Date: 2022-11-09 · Duration: 1:03:37
URL: https://www.youtube.com/watch?v=TO0WUTq5zYI

KEYPOINTS

1. ADHD involves a higher threshold for engaging dopamine, not an inability to focus

Huberman, who stresses that he isn't a clinician, notes that children and adults with ADHD can focus intensely on what they enjoy, such as a favorite video game. He doesn't tell anyone to stop prescribed Vyvanse, Adderall or Ritalin. His order is behavior first, with sleep and nutrition as prerequisites, then supplements such as L-tyrosine (a dopamine precursor, to be approached carefully), then prescription medication.

2. Mental focus follows visual focus

He describes visual focus exercises used in schools in China, now being studied elsewhere: hold your gaze on a target for 1 to 3 minutes, blinking as needed. He also cites Wendy Suzuki's NYU work showing that about 13 minutes a day of breath-focused meditation improved focus significantly, though few people stick with it. Focusing always involves refocusing.

3. Space-time bridging is a perceptual exercise, not mysticism

With eyes closed, place your attention just behind your forehead. The brain has no sensory neurons there, so you're attending only to thought. Then, keeping some attention on your breathing, focus at about hand's distance, then farther and farther, until you picture yourself as a speck in a vast landscape. Near focus slices time finely, while far, panoramic focus changes time perception and tends to calm. Huberman says people under stress, or with attention problems, tend to get stuck at or jump between these distances. His team is still collecting data on it.

4. Under high stress, the body starts leading the thinking brain

Citing his colleague David Spiegel, Huberman explains that normally the prefrontal cortex leads the insula and other areas that track internal sensations. Past a certain level of stress that relationship flips, and creativity and options shrink. In his analogy, the coach starts getting dragged by the players. Confidence comes from learning to modulate stress in real time and raising your stress threshold.

5. The dopamine system responds to how you interpret events

You have one reward system for money, mates, food and work, and it is highly contextual. Honestly reframing a failure as a win in some real sense can produce an internal chemical win that sets up real ones. He points to Nelson Mandela and Viktor Frankl, who found what they could control while imprisoned.

6. EMDR pairs a calm state with recalling trauma

EMDR is one of four approved behavioral treatments for trauma, and Huberman says it works best for single-event trauma. Side-to-side eye movements, which also happen naturally when walking without fixing on a target, strongly reduce amygdala activity. Pairing that calm with recounting the trauma is a form of reverse conditioning, and some researchers think it may involve clinical hypnosis. He predicts combination therapies, possibly with drugs that boost plasticity, rather than one-or-the-other choices.

7. Separate what modulates health from what mediates it

A physiological sigh directly mediates calming. Sleep, sunlight, exercise, nutrition, social connection and a healthy gut microbiome modulate many systems. Fixing a disrupted microbiome won't cure depression, but it can lift mood, because gut bacteria produce chemicals that become serotonin or dopamine in the brain. He recommends low-sugar fermented foods such as natto, kimchi, sauerkraut, kombucha and some yogurts.

8. Sustained motivation runs better on delight than on grit

Working from anger, fear or competitiveness works but depletes you and requires long recovery. A more renewable fuel comes from the dopamine and serotonin of genuinely loving what you do. In college, faced with a subject he hated, Huberman would try to fall in love with it by finding the gems in it. Sometimes it worked.

EXAMPLES

1. How long to stay in the cold

Asked whether to wait for adrenaline to rise and fall before getting out, Huberman says yes, if it's safe. Get to the "I really want out, but I can stay safely" point and leave after you've accomplished something, not in panic. He cites a European Journal of Applied Physiology paper showing a 100 to 200% dopamine increase lasting hours, a slow rise that he says doesn't crash. He finishes with a warm shower.

2. Cooling the palms

Hands, the soles of the feet and the upper face have vascular shortcuts that let the core cool faster. Craig Heller's Stanford work shows that cooling the hands between sets or during endurance work can greatly extend performance; Huberman says it can double sets or endurance. A cold, not ice-numbing, container of water works; you don't need a device.

3. Choosing Costello

Huberman picked the puppy that was eating out of its siblings' bowls and then napped instead of barking when separated. He wanted a calm, parasympathetic-dominant dog to steady his own nervous system. He contrasts bulldogs with whippets and Italian greyhounds, and agrees that a stressed horse's double-inhale sighs reflect the same stress-regulating mechanism.

4. Psilocybin: single large doses look promising, microdosing less so

Citing Matthew Johnson, Huberman says microdosing data are thin, while guided single high-dose sessions for depression, some PTSD, eating disorders and end-of-life distress are encouraging, with about two-thirds of people getting lasting relief in

current data. He notes Nolan Williams's point that psilocybin ranks near the bottom of perceived individual and societal risk. It isn't for people with psychosis, it's still illegal in most places, and guides help steer people away from distractions in the experience.

5. Why the sauna kills appetite

Huberman speculates that uncomfortable heat releases dynorphin, which suppresses appetite and later upregulates mu-opioid receptors. He adds that infrequent sauna use (once a week, four 20-minute sessions with 5-minute breaks) produced large growth-hormone increases in studies, with smaller increases when done more often.

OTHER RELEVANT

1. Advice for a 15-year-old

Get lots of sleep, and develop a keen awareness of what stresses you, relaxes you and delights you, as antennae for later choices. Huberman suggests this rather than prescribing a formal meditation practice, given how plastic the teenage brain is.

2. Find your seed of delight

Drawing on Robert Greene, recall what fascinated you before puberty. For Huberman it was cataloging tropical fish at a Palo Alto pet shop, which he says was really about organizing and predicting. Notice the physical pull of real interest. You find it through action and new people, not by waiting on a mountaintop. He cites Nobel chemist Carolyn Bertozzi, who stayed home in college to read organic chemistry.

3. Micro-slice what intimidates you

Huberman credits a friend's frame: you're back on your heels, flat-footed, or leaning forward. The aim is just getting from heels to flat feet, using calming tools so more internal resources stay available.

LIVE EVENT Q&A: Dr. Andrew Huberman Question & Answer in Portland, OR

Date: 2022-08-31 · Duration: 0:51:31
URL: https://www.youtube.com/watch?v=3_auLYOilb8

KEYPOINTS

1. Sleep, food and social connection are modulators; they set the stage but are not direct fixes
Answering a question on traumatic brain injury, Huberman separates foundational behaviors (sleep, nutrition, social connection, avoiding chronic stress) from interventions that act directly on the nervous system. The foundations matter for nearly every brain condition but set what is possible rather than producing a specific change, and people with TBI should prioritize them.

2. Hyperbaric oxygen looks promising for TBI, mostly through better sleep
He calls the hyperbaric chamber data for brain injury very encouraging. Brief hyperoxygenation of the brain seems to improve a number of outcomes, above all sleep quality and duration, and sleep is when most brain repair happens. The catches: chambers are expensive and hard to find, and he says to use one only with a physician or a highly skilled practitioner.

3. EPA omega-3s at roughly 1–2 g per day have a growing evidence base for brain health
Without a chamber, he points to the essential fatty acid EPA, with an effective threshold of about 1–2 grams of EPA a day from food or supplements. He says prescription EPA is now being given to some TBI patients, and that above about 2 g/day EPA has matched SSRIs as an antidepressant in some clinical trials. He credits Dr. Rhonda Patrick as the leading advocate of higher EPA doses.

4. Dopamine narrows focus; addiction is a progressive narrowing of what gives you pleasure
Elevated dopamine, from excitement or drugs, narrows attention and drives you to seek more of whatever you're focused on. Huberman defines addiction as a progressive narrowing of pleasure sources and a good life as their progressive expansion. The best way down is to stop pursuing more dopamine after big peaks, which explains the post-party or Monday blues.

5. Random, intermittent reward is the healthiest reward schedule
Rather than rewarding yourself or your kids every time, he argues for occasional, unpredictable reward, the schedule slot machines exploit. Rewarding every outcome, or only winning, can unbalance the dopamine system; he suggests this is partly why so many high performers crash and burn.

6. Low-angle morning and evening sunlight is the best circadian signal because of its color contrast
He cites Jay and Maureen Neitz at the University of Washington: the eye's clock-setting neurons respond best to yellow–blue contrast and orange tones, which are present when the sun is low and absent at midday. Daylight simulators deliver only brightness, not this contrast. He proposes that color vision may have evolved first to tell time of day, with color perception secondary.

7. Shift workers should bundle all of their time cues together
Light is the strongest clock signal, followed by movement and changes in body temperature, with meal timing and social activity also playing a part. A rise in body temperature promotes alertness, and core temperature drops 1–3 degrees to bring on sleep. When coming off a night shift, he advises combining sunlight (no sunglasses), exercise, coffee, a meal and social contact inside the same window of about 1–2 hours for at least 2–3 days, so the internal clocks lock onto it.

8. Close-up screen viewing physically lengthens the eye and drives myopia
Spending hours focused on things within about two feet of your face lengthens the eyeball, so the image lands in front of the retina. In clinical trials, mainly in children, two hours a day outdoors reduced or even reversed myopia. He recommends at least 10 minutes of looking at things more than 10 feet away for every 30 minutes of close-up work, and argues that the narrow visual window also makes our thinking 'myopic'.

9. Self-induced adrenaline is a training ground for staying calm under arousal
Wim Hof-style cyclic hyperventilation (about 25 deep breaths) and cold exposure both release adrenaline. Citing his colleague David Spiegel, Huberman says that choosing to enter a high-arousal state is very different from being thrown into one. Deliberate adrenaline lets you practice keeping a clear mind while your body is agitated. You can adjust the dose with colder water, longer immersion, moving your limbs, or more breaths.

10. Hard stimuli work better when used sparingly
Cold, sauna and long endurance efforts all bring adaptation, and he warns that pushing them ever further, as some ultrarunners do, can turn into dopamine chasing. He suggests about three ice baths a week is plenty. In contrast, try to get sunlight every day, but if you miss a day, simply stay out twice as long the next day. Focused practice three times a week is enough to learn a language or an instrument.

EXAMPLES

1. A cold-water dopamine rise of about 2.5x that lasts
He cites findings from other labs that immersion in water as mild as about 60°F produces a long-lasting dopamine increase of roughly 2.5 times baseline, which he describes as comparable to some prescription drugs.

2. PNAS study: breathing and E. coli injection
People trained in cyclic hyperventilation were injected with E. coli endotoxin alongside a meditation group. The meditators developed nausea, vomiting, diarrhea and fever, while the breathing group had far fewer symptoms or none. His explanation is that adrenaline temporarily suppresses innate immune responses, which is why people often get sick on vacation right after a stressful stretch.

3. Glenn Jeffery's red-light vision protocol

Volunteers looked at red light (sometimes a flashlight with a red film) from about two feet away for a few minutes in the morning. It improved photoreceptor mitochondrial function, cut reactive oxygen species and improved acuity and some color vision. It only seemed to work in people over 40 and within the first three hours after waking. Sessions of 1–2 minutes a week produced effects lasting up to three weeks.

4. Sauna marathon and growth hormone

Repeated 30-minute hot sauna sessions with 5-minute breaks, about two hours in one day, raised growth hormone roughly 16-fold in humans; daily or several-times-weekly use gives diminishing returns. Real sauna benefits need about 80–100°C, which most infrared saunas do not reach.

5. How Wim Hof found his method

Grieving his wife's suicide, with four children at home, Hof went into a cold Amsterdam canal. The shock let him anchor his thinking, and he later found breathing could do something similar. Huberman adds that he nearly injured his leg badly on a 2016 mountaineering trip with Hof.

OTHER RELEVANT

1. Clinical dopamine blockade is a last resort, not a habit tool

For severe agitation, obsession and insomnia, some psychiatrists prescribe a single very low dose of a dopamine receptor blocker such as haloperidol. Huberman stresses that it must be prescribed and that blocked dopamine feels bad. For most people, behavioral control of the reward system is the right first approach.

2. Fermented foods over high-dose probiotics for the gut

Citing Stanford's Justin Sonnenburg and Christopher Gardner, he reports that about four servings a day of fermented foods (kimchi, sauerkraut, kombucha) improved the microbiome and immune markers. Expensive high-dose probiotics, by contrast, can cause brain fog and are meant for severe dysbiosis.

3. Taper out of stress with some arousal

Rather than going straight from intense work to pure rest, which is when people often get sick, he suggests adding some adrenaline-raising activity, such as cold exposure or deliberate breathing, as a stressful period winds down.

4. Draw on gratitude and love, not fear, for hard things

Huberman admits he long used imagined battles and fear of shame to get himself through hard tasks. It works, but it feels like a downward spiral. Now, before something hard, he thinks of the people and animals who supported him, such as his late bulldog and his graduate advisor.

LIVE EVENT Q&A: Dr. Andrew Huberman Question & Answer in Seattle, WA

Date: 2022-08-17 · Duration: 0:56:04
URL: https://www.youtube.com/watch?v=2Ds1m5gflCI

KEYPOINTS

1. Huberman's most-used protocols: morning and sunset light plus daily NSDR
He views morning sunlight and the sunset every day and does 10–30 minutes of non-sleep deep rest (NSDR) daily, usually in the early afternoon or after a short or poor night. He coined 'NSDR' to make practices like yoga nidra less off-putting, and first saw them used daily at a trauma and addiction treatment center in Florida.

2. In dark winters, get more light and catch the light before sunset
Asked about Seattle, where sunrise swings from 4:30 am to 9 am, Huberman says you don't need to see the sun cross the horizon; aim for low-angle sunlight, and use bright indoor lights if you're up before dawn. In winter he suggests about 30 minutes of daylight viewing and, crucially, getting outside before the sun goes down so your brain knows where it is in the day.

3. Waking without drive may come from deep sleep or waking mid-cycle
His guess for a listener who goes to bed fired up but wakes flat: very deep, parasympathetic sleep makes the transition out harder, and waking mid-cycle makes it worse. He suggests trying an alarm timed to the end of a 90-minute cycle, for example 6 or 7.5 hours instead of 7. His own morning: 'I want water. I want sunlight. 90 minutes later I want caffeine.'

4. To remember something, spike adrenaline after learning, not before
Citing James McGaugh's work and Larry Cahill's at UC Irvine (with stories going back to medieval times of children being thrown in a river after a lesson), Huberman says arousal right after learning strengthens memory. Beta-blockers given after emotional learning weaken it. He now uses cold water exposure after learning for this, and warns against excessive stimulants.

5. The test for social media addiction: you keep doing it although it isn't interesting
Dopamine hits come early; mindless scrolling afterward means 'driving that wave pool down'. Phones also tap the brain's maps of where people are, when you'll see them and how close you are to them, which is why people text the moment a plane lands. He suggests phone-off breaks of at least an hour, noting that when he switched off every odd hour, some relationships couldn't tolerate it.

6. Failure sharpens focus for the next attempt, but too much failure trains you to expect failure
After a miss, the forebrain commits more resources and focus narrows, which helps unless it narrows so far that you lose useful information. Over the longer term, the brain as a prediction machine starts expecting failure without wins, so he gives lab students an early publication and values team support.

7. Virtuosity means inviting back uncertainty
Huberman describes four tiers of performance: unskilled, skilled, mastery (predictable outcomes) and virtuosity, which reintroduces uncertainty. For elite performers who already have sleep and nutrition sorted, he points to creativity. Unpredictable inputs such as nature, aquarium videos and the state between sleep and waking loosen top-down rules, ideally without the destructive substances many creatives have used.

8. Dopamine makes whatever it's paired with seem important
Stimulating dopamine release paired with even an 8 kHz tone remaps the brain to favor that tone. Stimulant drugs (and, he notes, MDMA, with its unusual high-dopamine, high-serotonin state) make anything seem interesting, which is why he says such compounds belong in university clinical trials. High-novelty seekers have 'an eight-cylinder car' and need to drive it carefully.

9. Behaviors first, then nutrition, supplements and drugs
His foundation is essential fatty acids (fish oil or fish), fermented foods (based on Justin Sonnenburg's and Chris Gardner's Stanford work) and vitamin D3 for those who are deficient. He sometimes uses alpha-GPC for focused work. 'No supplement actually rewires you… behaviors do that.'

10. ADHD: time medication carefully, or train focus without it
With a physician, find the minimal effective dose and the right time of day; in the first 8–9 hours after waking, cortisol, dopamine and epinephrine systems work most effectively. Without medication, focus can be trained, for example with visual-target drills used in China, but 'it feels terrible to train it'. Some people can lower or stop medication this way; others can't.

EXAMPLES

1. Physiological sigh study with David Spiegel and Melis Yilmaz Balban
In a large pandemic-era study with remote monitoring, a brief daily practice of the physiological sigh (double inhale, long exhale) was the most effective of the breathing protocols tested for improving heart rate variability, lowering heart rate and improving sleep. At the time the paper was still under review.

2. Matthew Johnson's answer on microdosing: 'macrodose'
The Johns Hopkins psychedelic researcher told Huberman that one guided, high-dose session that directs plasticity seems far more useful than undirected nudges. Huberman's analogy is that opening plasticity is like running: the goal is to run in a particular direction. He urges caution for young people and those with psychiatric or addiction histories.

3. New neurons in terminally ill adults
To a 66-year-old asking whether it's too late to learn, Huberman cites Rusty Gage's Salk Institute work showing new hippocampal neurons even in terminally ill people, and Richard Feynman learning to draw late in life. Focus and sleep get harder, but the mechanisms remain.

4. Two 20-minute office naps a day

A Howard Hughes investigator Huberman knows naps twice daily, and once used their scheduled meeting time for a nap before giving a great talk.

OTHER RELEVANT

1. Schedule recovery at least every three days

As a young scientist, Huberman worked hard Monday and Tuesday, came in late or not at all Wednesday, pushed hard Thursday and Friday, and took Saturday off. Find non-destructive ways to reset dopamine and energy, such as long walks, exercise or NSDR.

2. Four questions for reading a paper

What question are they asking? What did they do (species, conditions, methods)? What did they find? What did they conclude, and does that actually answer the original question? Take notes, and explain the paper to someone to remember it.

3. Advice for scientists who want to communicate

Get rigorous formal training first. Share what genuinely excites you, however nerdy. Do it to be useful, not for followers. He recalls the late Ben Barres warning that colleagues may dislike it, 'so whatever you do, you better make it good.'