

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

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Timestamps

00:00:00 Introduction

00:01:27 How to achieve consistent state of motivation? [Martin Zokov]

In the full AMA episode, we discuss:

- Are there neurological benefits from different types of body work?
- Are goals necessary for the growth mindset and how to set the best short and long-term goals for creativity?
- Is anxiety useful? Can it be controlled?

Articles

Dopaminergic stimulation enhances confidence and accuracy in seeing rapidly presented words: <https://bit.ly/3Znz3Zn>

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ANDREW HUBERMAN: Welcome to the Huberman Lab podcast, where we discuss science and science-based tools for everyday life. [MUSIC PLAYING] I'm Andrew Huberman, and I'm a professor of neurobiology and ophthalmology at Stanford School of Medicine. Today is an ask me anything or AMA episode, which is part of our premium subscriber content. Our premium channel was launched in order to raise support for the standard Huberman Lab podcast channel, which still comes out once a week every Monday and, of course, is zero cost to consumer. The premium channel is also designed to support exciting research being done at major universities like Stanford and elsewhere, research that's done on humans that should lead to protocols for mental health, physical health, and performance in the near future. If you'd like to check out the premium channel subscription model, you can go to hubermanlab.com/premium, and there you can subscribe for \$10 a month or \$100 a year. We also have a lifetime subscriber option. For those of you that are already Huberman Lab podcast premium subscribers and you're watching and/or hearing this, please go to hubermanlab.com/premium and download the premium podcast feed. And for those of you that are not already Huberman Lab premium podcast subscribers, you will be able to hear the first 15 minutes or so of this episode, and hopefully, that will allow you to

discern whether or not you would like to become a premium subscriber. Without further ado, let's get to answering your questions.

00:01:27 How to achieve consistent state of motivation? [Martin Zokov]

And as always, I will strive to be as accurate as possible, as thorough as possible, and yet, as concise as possible. Our first question is about motivation, in particular, how to maintain motivation over long periods of time. This was the question asked by Martin Zokov. He wrote, "I alternate between periods of two different states that vary from a few weeks to a couple of months. I have extremely high motivation in one state, where I can do multiple things-- side projects, making music, as well as my main things, or really low-motivational states, where I can barely do anything, and I only look for short term entertainment." I'm guessing, short-term entertainment comes in the form of video games, social media, and just doing generally unproductive things, as we all do from time to time. He goes on to write, "What would be the best set of protocols to normalize those extremes into a more stable and consistent state?" Well, first off, this is an excellent question. I say that because it's a question that I hear a lot, and I think that many people are interested in knowing how motivated they ought to feel. And I think a lot of people also feel a lot less motivated than they would like. Now, here the question was, specifically, about how to not go from these extremes of days or weeks of high motivation to days or weeks of low motivation. But before we do that, we need to take a step back and acknowledge that, just as with anxiety, or happiness, or sadness, we as human beings don't have an objective window into how other people experience motivation. In fact, most of the time, we don't even realize how we experience motivation. We just know whether or not we feel a high barrier or a low barrier to leaning into work and getting things done. In fact, I have a good friend who did many years in the special operations community, and then went on to the finance community, and then now works in health and wellness community. He has a great mental image for all of us to adopt. It's certainly one that I've adopted, which is-- for anything in our life, we can either be back on our heels, flat footed, or forward center of mass. Back in our heels, meaning really struggling; flat footed, meaning we're doing OK; or forward center of mass, meaning that we feel as if we're really tackling things and that we are in control of our environment or at least to some degree. So I place that imagery in your mind because I'll return to it a little bit later in the question when we get into some of the

underlying circuitry and tools. In the meantime, I want to remind everybody what the basis of motivation is. There are many neurochemicals and neural circuits involved in what we call motivation, but a central theme of the neuroscience of motivation is that the neural modulator dopamine is involved. Now, dopamine does other things besides control motivation. In fact, it controls light adaptation in the retina, that is your eye. It controls a number of different things in terms of movement. It controls all sorts of things, but it is strongly related to the motivation pathways. How do we know that? Well, there are experiments on animals and humans, which show that even in the absence of dopamine, or in the presence of very low dopamine, I should say, people and animals can still experience pleasure. However, when dopamine levels are too low, people's ability to pursue pleasure, or their willingness to pursue pleasure, in particular, their willingness to undergo effort to pursue pleasure or any goal of any kind, not just pleasure, any goal of any kind, is strongly regulated by the levels of dopamine. So if dopamine levels are too low, people simply will not put in the effort to obtain or reach a goal. If dopamine levels are adequately high, they will put in that effort. And if dopamine levels go too high, you actually see something that is pathologic, which is that people consider every goal a reasonable goal. This is often seen in the manic phase of a manic bipolar person. So for instance, somebody with manic bipolar who is in a manic episode, dopamine levels are very, very high, and they will think every idea is a great idea. And they will have tons of energy to do that, so much so so that they're not sleeping. So obviously, that's not what we want. What we want, and what the question asker, Martin, is asking about, is how to keep dopamine levels in a range that allow us to lean into effort but that we don't expend our ability to stay motivated. And we can really trace that back to a biochemical/neural circuit statement, which is-- we really want to control our output of dopamine and the baseline levels of dopamine from which that output is taken. In other words, we want to think about dopamine as a reservoir or residing in a reservoir. That reservoir can be depleted, so it's exhaustible, it's depletable, but it's renewable as well. And one of the best analogies that I've ever heard was by a previous guest on the Huberman Lab podcast, Dr. Kyle Gillett, who's a medical doctor, obesity specialist, expert in hormones. We did an episode on optimizing hormones in males with Dr. Kyle Gillett. You can find that at hubermanlab.com or anywhere you can find podcasts. Dr. Gillett offered an analogy of the baseline levels of dopamine as a wave pool, and I really like this. So if you think about this pool full of dopamine-- and here we're just talking about the dopamine that resides in the circuits of the brain that control motivation. But

that pool of dopamine you could imagine is just sitting there not doing much of anything while you're asleep. In fact, while you're sleeping, you're replenishing those dopamine levels. I'll tell you another tool in a moment to replenish those dopamine levels. But if you were to pursue a goal, really, really go forward-center of mass for many, many hours or many, many days, in some cases, and pursue a goal or multiple goals and you're really driven to do a ton, what you're effectively doing is generating waves in that wave pool. And if those waves are too big, well, then the waves can't keep repeating themselves. So think about the wave as the motivation and the depth of the pool is the reservoir of dopamine. And if those waves are too big, too much excitement, too much motivation, too much center of mass for a given period of time, then the water in this wave pool sloshes out of the wave pool lowering the reservoir. And then there are really three ways that you can replenish that reservoir, and you want to maintain or replenish that reservoir if it's been depleted. How do you do that? Well, first of all, quality sleep. So when I say quality, I mean where you're getting enough slow wave sleep and rapid I move in sleep. So for some people, six hours, for some people, eight hours. Some people might even need a little bit more or a little bit less. We have episodes-- the Perfect Your Sleep episode, the Master Your Sleep episode. We have a toolkit for sleep. All available at zero cost at hubermanlab.com, links et cetera. So check those out for getting your sleep right. But sleep is really when you replenish that reservoir of dopamine. So you cannot ignore sleep. I'll come back to this in a moment. The second science supported tool that's really been shown to replenish dopamine, in particular, dopamine within the pathways that regulate motivation, is a practice I've talked about before on the podcast called non-sleep deep rest, sometimes called yoga nidra, although, yoga nidra is a little bit different. There are two studies out of Denmark that have explored yoga nidra in the context of dopamine. The first one simply involved having people do a yoga nidra practice. Again, this doesn't involve any movement, but it involves people, potentially you, doing anywhere from 30 to 60 minutes, although there are now data showing that as short as 10 minutes of a non-sleep deep rest, a.k.a. yoga nidra protocol, leads to dramatic, really dramatic increases in striatal dopamine reserves. So it essentially is replenishing the dopamine reserve pool. This is why I'm such a fan of using NSDR, a.k.a. yoga nidra, at least once a day and especially under times when you're engaging in a lot of high output. ([Yoga Nidra Ebook & paperback](#)) And when I say, especially at times when you're engaging in a lot of high output, this is a mistake many people make. They push, push, push, push, push. They're in pursuit of a goal. Then they hit that point

where they're exhausted. Then they start doing all the dopamine reserve pool replenishing tools such as yoga nidra or NSDR. The real key is to always tap off that or refill that reservoir once a day before it's completely depleted. Now, this gets into some of the biochemistry of dopamine and the relevant circuits, but it takes a lot longer to restore the dopamine reservoir-- think of it still as a wave pool, but that reservoir from a place of complete depletion then it does of partial depletion. So there's an asymmetry in the way this is done. So it's not as if you drink a glass of water. You fill the glass of water at a certain rate and it fills up to a certain level, and the rate is constant. Think about it as once the level of dopamine in your reserve is depleted past a certain point, it takes a lot more effort, much more sleep, much more NSDR, things of that sort to replenish that reservoir. Now, oftentimes what people will do when they start feeling less motivation is they will start relying on things like Adderall, Ritalin, some cases illegal substances that can increase dopamine. You know what those are. Please don't ever lean in to those. They are extremely dangerous. They really are because of their ability to potentially release dopamine. And guess what, deplete that reservoir even further. We've talked about some supplements on the podcast that can replenish dopamine, L-tyrosine in particular. Mucuna pruriens is actually 99% L-DOPA, the precursor to dopamine. I don't necessarily recommend Mucuna pruriens. It tends to make people very dopaminergic-- drive, drive, drive, drive, motivated, and then crash. Again, depleting that pool. L-tyrosine is a little bit milder. But I really encourage people to lean first on the behavioral tools such as an NSDR. And by the way, there's a NSDR script, totally zero cost, that you can find by putting my name and NSDR into YouTube. That one works quite well if you are looking for a short NSDR. There are some other NSDRs. You can simply look on the internet or YouTube and just put NSDR and you'll find NSDR. Or if you prefer to do the more classic yoga nidra type approach, there are a lot of different yoga nidra options to choose from on YouTube. Many people think NSDR or yoga nidra are simply meditation with a body scan. That's not true. Meditation is a focus exercise. Most meditations are focus exercise. NSDR restores energy through the dopamine system, and newer data are starting to show that it can actually recover lost sleep, so if you're not sleeping enough. But to return to NSDR, a.k.a. yoga nidra, as a practice, yes, it's been shown in laboratory studies, in humans, by the way, to restore dopamine levels. There's another study, lesser known, from that same group that was published in 2011, which is entitled Dopaminergic stimulation enhances confidence and accuracy in seeing rapidly presented words. This was a cognitive task. They explored yoga nidra, a.k.a. NSDR, in

the context of increasing striatal dopamine. They already knew that it did that, so that's great. They confirmed that result. But what they also found is that doing NSDR could restore confidence in cognitive ability and performance in these cognitive tasks. So this is a really powerful, zero cost tool for re-upping or replenishing that dopamine reserve. So this is something to do every day, especially when you're not feeling depleted. So the question, again, was about how to make sure that you don't go through these cycles of extreme motivation and then lesser motivation. Well, get your sleep right. I always say, 80% or more of the nights of your life, hopefully the nights that it's not good, are for good reasons that you're enjoying yourself. But hey, life happens, so 100% of the time it's just not reasonable to expect of yourself. Do NSDR once a day for either 10 minutes. If you have the time to do 20-30 minutes or an hour, you will see even more positive effects. It has been shown in these research studies to replenish dopamine, levels of confidence, cognitive ability, et cetera, and sense of motivation. And I said there were three tools, and the third tool that really can allow you to keep the dopamine, a.k.a. motivation circuitry, tuned up properly is to really start paying attention to peaks in dopamine and be very careful about layering in too many things that can stimulate the dopamine system. I talked about this quite a bit in the episode that we did on ADHD and building and maintaining focus. There are many things out there nowadays that will deplete the dopamine system. For instance-- and by the way, none of what I'm about to list is necessarily bad. I actually used some of these things. For instance, caffeine will increase dopamine receptors that will allow whatever dopamine is available to be more potent. OK, so caffeine is great for some people, less good for people with anxiety. Don't drink it too late in the day because it will interfere with your sleep, and so on and so forth. But many people will combine caffeine with music that they particularly like. Music's great. Music can stimulate dopamine release, we know this. It can enhance motivation, especially if it is the kind of music that really puts you in the groove for the particular type of work you're going to do. For me, I like to listen to either loud fast music or Glenn Gould classical piano, so one or the other. I know what's right for me for a given time. You'll know what's right for you for a given time and your preferences. But what will happen is people will start consuming caffeine at higher and higher levels. Again, caffeine isn't necessarily bad, but they'll start doing that. And they'll start layering it in, or stacking, very potent music, potent for them, plus things like L-tyrosine ([L-tyrosine supplement](#)). Again, none of these things are terrible on their own. In fact, they can be very beneficial. Sometimes they'll start taking Mucuna pruriens. Sometimes they'll start

relying on things like Adderall, Ritalin. And pretty soon what's happening is they're getting these big waves in that dopamine wave pool, big peaks. And within a few days or maybe even within a few hours, they're depleted and they're at that low. And then, as Dr. Anna Lembke, who is a guest on the podcast, talked about in terms of addiction but also in her wonderful book *Dopamine Nation*, what happens is after those big peaks in dopamine, the reservoir, the baseline in dopamine, drops below its initial level. So it's as if the reservoir got deeper, and it's emptier, and it takes much, much longer to fill. So to be quite specific, what I'm recommending is get your sleep right. Ideally, every night of your life, but for as many nights of your life as possible. That's clearly replenishing dopamine and sense of motivation. Do all the things associated with that-- morning, sunlight, lack of artificial light at certain hours of the night, et cetera. All of that's in the Toolkit for Sleep and other episodes I mentioned before. Have a practice that is research supported to replenish dopamine, and incorporate that practice any time of day. Again, NSDR can be done morning, afternoon, or evening, or middle of the night if you wake up and you need to get back to sleep, it can be very beneficial for that. But do it as a consistent practice so that dopamine reservoir remains topped off. And as a third point, please be wary of, or at least aware of, these peaks in dopamine and the fact that layering in a lot of things that stimulate dopamine, well, that can be wonderful for your wedding, birth of a new child, going to a sports event with a bunch of friends, celebrating a big anniversary. Yes, please do celebrate and enjoy the wonderful events of life, but please also understand and expect there will be a lull, a sort of postpartum low, maybe not full blown depression, that follows that unless you incorporate some tools and practices to replenish that dopamine. Does that mean you should never combine caffeine, L-tyrosine, music, and a workout, and time with friends? No, absolutely not. But don't expect to do that, and then go do an intense bout of work, and then get up the next morning and do it all over again for more than a few days before you find yourself pretty depleted. So rather than give you a specific schedule of do seven days of this and four days of this, what I encourage you to do is, for at least five days a week-- maybe give yourself some time off on the weekends, maybe not. But for at least five days a week, get into a consistent routine that is, I should say, neurobiologically consistent as well with how the dopamine, a.k.a. circuits that control motivation, work. And I assure you that you will find yourself in a more regular groove of focus, and attention, and alertness, and motivation when you need to. And provided you're doing all the things I described, and hopefully paying attention to other things like nutrition and social connection too, of

course, you'll find a much more even pattern of motivation over time. One last thing before I conclude the answer to this question. When I was in graduate school, I got some wonderful advice from an excellent neurologist. His name is Robert Knight. He used to be at University of California, Berkeley. I think he's retired now but is still active in the scientific community. And I asked him what he was doing that weekend. I don't know why this came up. And he said, oh, I'm going fishing. I like mindless recreation. I said, that's great. You know, fishing is fun. I'm not particularly into fishing myself, but I've done it a few times and I enjoy it. And he said, the most important thing for a science or medicine career or any demanding career? I said, what? I was all ears, super hungry to get in the mix and do research and publish papers. And he said, figure out how many hours a day you can do real work consistently. That means five days a week, for some people six or seven, but five days a week I think for most people is going to be a bit healthier overall for your social life and family, et cetera. And he said, figure that out, and know that that number is what you should apply over, and over, and over again, but update that number about every four or five years. And I said, OK, so does that mean that over time I'm working more and more or less and less? And he said, ah, here's the deal-- as you get better at your profession, you will find that you can do more potent work, more directed work, in a shorter amount of time, but that does not mean that you can continue to expand the amount of time that you're doing focused work. In fact, the opposite. So this follows a sort of general principle that's also present in resistance training, weightlifting, right? The analogy there is that people always imagine that as you get better and better at resistance training that you should do more and more volume, just keep adding volume. And there's some evidence to support that. More volume for hypertrophy as opposed to less, et cetera. We've done episodes on this. However, there's a different school of thought that works exceedingly well, and it runs in the exact opposite direction, which is as you get better at controlling muscular contractions-- or let's say for in an endurance sport, as you get better at regulating your stride, and breathing, and all those things, you actually can do more "adaptation" stimulating damage during a given training session. So you want to train less not more over time because beginners don't actually have the ability to get much done in a lot of time or a short period of time, whereas, experts can come in there and really nail it. So I think that advice that Robert Knight was really key, and it's something that I've followed throughout my career. So at one period of my life, I won't mention the hours that I worked in graduate school, they were pretty insane to be honest. I had family members get a little

concerned. I actually lived in the laboratory even as a junior professor. I don't suggest people do that by the way, but I enjoyed it at the time. And the key thing is that you figure out what you can do consistently and still maintain mental health and physical health. That's key as well. And do that, and then, every couple of years or so, update that, typically, by reducing the total amount of time that you're doing that high-potency work. I think that, combined with the other tools that I described before for generating ongoing dopaminergic circuits, keeping that reservoir full, ought to give you consistent motivation. Again, it's an art, and a practice, and a science, so don't expect to get it perfect the first time around. But I wish you all luck, and I'm certain that these tools work. Thank you for joining for the beginning of this ask me anything episode. To hear the full episode and to hear future episodes of these ask me anything sessions, plus to receive transcripts of them and transcripts of the Huberman Lab podcast standard channel and premium tools not released anywhere else, please go to hubermanlab.com/premium. Just to remind you why we launched the Huberman Lab podcast premium channel, it's really twofold. First of all, it's to raise support for the standard Huberman Lab podcast channel, which, of course, will still be continued to be released every Monday in full length. We are not going to change the format or anything about the standard Huberman Lab podcast. And to fund research. In particular, research done on human beings, so not animal models but on human beings, which I think we all agree as a species that we are most interested in. And we are going to specifically fund research that is aimed toward developing further protocols for mental health, physical health, and performance. And those protocols will be distributed through all channels. Not just the premium channel but through all channels-- Huberman Lab podcast and other media channels. So the idea here is to give you information to your burning questions in depth and allow you the opportunity to support the kind of research that provides those kinds of answers in the first place. Now, and especially exciting feature of the premium channel is that the tiny foundation has generously offered to do dollar-for-dollar match on all funds raised for research through the premium channel. So this is a terrific way that they're going to amplify whatever funds come in through the premium channel to further support research for science and science related tools for mental health, physical health, and performance. If you'd like to sign up for the Huberman Lab premium channel, again, there's a cost of \$10 per month, or you can pay \$100 up front for the entire year. That will give you access to all the AMA's. You can ask questions and get answers to your questions, and you'll, of course, get answers to all the questions that other people ask as

well. There will also be some premium content such as transcripts of the AMA's and various transcripts and protocols of Huberman lab podcast episodes not found elsewhere. And again, you'll be supporting research for mental health, physical health, and performance. You can sign up for the premium channel by going to hubermanlab.com/premium. Again, that's hubermanlab.com/premium. And as always, thank you for your interest in science. [MUSIC PLAYING]