



## **Transcript of “The Rise of Superman with Steven Kotler”**

Bulletproof Radio podcast #109



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Dave: Hey everyone. It's Dave Asprey with Bulletproof Executive Radio. Today's cool fact of the day is that size matter when it comes to the world economy. Studies done over a 25-year period found an unusual and unlikely relationship between average male genital size in a certain country and the country's gross domestic product. Apparently once it's over 16 centimeters, the GDP crashes. No explanation as to why.

Today's guest is someone I am so excited to be interviewing. We're both having a hard time not laughing about that cool fact of the day. It's Steven Kotler who is the author of a book that's just coming out called [\*Rise of Superman\*](#). This is a book about flow states and about the quest for increasing human performance.

If there's ever any guest who's been on the show, and we're doing 100 episodes, who epitomizes this kind of research at all, it is Steven. Steven's also cool because he lives in Taos which is right by where I used to live, where I grew up, where I blew up my knee when I was a kid. He also had lime disease which he and I have in common.

Steven, welcome to the show. I can't wait to hear more about your book and about the flow state. Let's just jump into it.

What is the flow state, the way you define it? I've heard lots of different explanations from pro athletes or from other things. How are you using the word flow state and where did this come from?

Steven: Let me define it first and then I'll give you a bit of the history. Flow is technically defined as an optimal state of consciousness. This is a state of consciousness where we feel our best and we perform our best. Most people have at least a passing understanding of flow, right? If you've ever lost an afternoon to a great conversation, if you get so sucked into a work project that everything else vanishes, then you've tasted the experience.

In flow tension gets so laser focused that everything else falls away. Your sense of self, your sense of self-consciousness, they disappear completely. Time dilates. Sometimes it can slow down like that freeze

frame effect in a car crash or can speed up. Five hours will pass by in like five minutes. Throughout all aspects of performance, mental and physical, go through the roof.

Where the term comes from, historically: the research on flow goes all the way back, modern research because there's other research going back before the Greeks and what not. Modern research on flow goes back at about 871. It was called different things until University of Chicago psychologist Mihaly Csikszentmihalyi came along.

He performed what now we'd call the largest global happiness survey ever. He kept asking people about times in life when they felt their best and they performed their best. He talked to everybody that he could possibly imagine, from Detroit assembly line workers to Japanese teenage motorcycle gang members, elderly Korean women, Navajo sheep herders, expert dancers, expert neurosurgeons, and the list goes on and on.

Everybody agreed that when they felt their best and were at their best, they felt flowy. Every decision, every action led perfectly, seamlessly, fluidly to the next. That's where the term comes from.

I kind of like to think of flow in short hand as near perfect decision making. To me that's the very short short definition. I gave you the long one, I put it in context. It's a thing for good, yes?

Dave: It makes great sense to me. It's a state of peak performance. It's interesting. I've certainly felt it at different times in my life, but the most dramatic one that I have felt was actually from a friend, one of my friends from school. He'd decided to write a book right after Steve Jobs had died, about Steve Jobs. He put one together.

He was late for a meeting. He's like, "Dave, I don't know what happened. I started writing and I just wrote the whole thing in five hours. I missed meetings and I missed all these things. Time just went away." It was almost like a verbatim description of what you're saying.

He was so excited, not just about creating a book for an icon but that time had disappeared for him and that he just experienced this massive

state of flow. Certainly it's something that when I write, when I really get into one of my research posts, same thing. "Wow, it's 3:00 am and I just didn't really pay attention to the last three hours. They're gone."

Did you do this when you were writing your book? Did you hit a state of flow for the book?

Steven: The best flow in writing a story I've got comes from a book I wrote a bunch of years ago called [A Small Furry Prayer](#) which is about the relationship between humans and animals. Turn in the first draft. They backed me and they liked up to page 110. Pretty much everything after that they said basically, "Throw it out and start over."

I've never had writer's block in my life. The book was due in October. I get this sent back in April, plenty of time. May comes along; I still can't get anything down. June, July, by August I'm absolutely blind with panic. I have 250 pages to write in a month and I can't write a word, at all.

I go skiing, I go mountain biking for the very first time downhill mountain biking for the very first time, kick into a flow state, come back. I'm still in flow. I sit down, I start writing. I write for two and a half weeks straight, finish the book. I turn it in as I'm out of time. It comes back to me. They've got notes on the first 110 pages. They have not a change on the next 250.

Here's the crazy thing. The book was a huge bestseller. It was nominated for a Pulitzer prize. That last 250 pages were written in a sitting, in one two-week period of writing. I slept a little bit and would eat a little but I'd wake up and I was still in that state. That's the most powerful writing flow experience I've ever had.

Dave: That is remarkable. When I was working on the very early days I was thinking about writing [The Better Baby Book](#), the only book I've had published which had a ton of research and all. I came out of a neuro feedback chamber in a very deep alpha state, I was literally buzzing, was kind of pulsing around me.

I sat down. Without any effort I picked up a pen and I wrote the whole outline for the book. It came out of my subconscious. It was one of those

things I didn't have any awareness of it around me. It was just like flowing onto the page. That was actually the outline that I went with for the book. There was no thinking or logic or planning. It just came out on the page.

Steven: By the way, when you look under the hood of flow and you look at the neurobiology, what's causing flow, everything that's coming out, everything we're talking about, what's really amazing is, of course there is but it's still amazing to me. There's absolute precise neurobiology. We know why all these things are happening.

For example, we do know that your subconscious is taking over your conscious mind and flows. One of the things that happens, the prefrontal cortex shuts off in flow. The extrinsic system is what's it called turns off and the intrinsic system takes over. It's an efficiency exchange. During focused attention, when you need all ...

Brain has a fixed energy budget. It's 2% of your body weight but uses 20% of your energy. It's a big energy hog. It's got a fixed energy budget. When energy is needed for concentration and attention the brain performs an efficiency exchange. It flips from conscious processes, when it's slow to very energy intensive, time conscious processes.

In flow ... normally this happens at other times. What gets to watch it happen. That's one of the reasons it's so strange, because you're essentially watching your self-conscious mind process reality; and normally you never get to see that.

Dave: It's remarkable what you can do when you're in that state. How can people turn that state on?

Steven: What's really interesting about flow is, when Csikszentmihalyi did his original work, he identified seven conditions that describe flow. We've just kind of gone through them, time dilation, vanishing of self, concentration, and blabla. He also identified at that point three, what I call flow triggers. These are preconditions that lead to more flow.

Csikszentmihalyi identified three psychological preconditions. These have since been extremely well validated. They're kind of at the heart of

expert performance theory at this point. That was back in the '60s, '70s, and '80s. From that point forward the next thing that happened was a guy named Keith Sawyer came along. He was a neuro-psychologist, the University of Washington in St. Louis.

Keith figured out there's a group version of flow called group flow. A whole bunch of people get in a flow state together. This is really common in a start-up sort. If you've ever witnessed a football team, you're looking at group flow. Everybody's on the same page. When a band hits their groove and everything just sounds amazing all of a sudden, that's group flow.

He figured out there are ten social triggers that lead to more group flow. The work we've done at the [flow genome project](#), which is the research organization that I cofounded that looks at this stuff, we've identified three more environmental triggers and one creative trigger.

The creative trigger, it is very early days on the creative trigger research. I would assume as time goes on, and we can kind of break creativity further and further apart neurobiologically that will expand it to more than just one creative trigger. Right now we call it the creative trigger.

We can go into more detail about what these are later if you want. The way to get more flow is to essentially build your life around these triggers, which I always tell people, "This is very radically different from self-help. You get far more benefits." Most of the self-help, human optimization stuff, they're saying, 5% to 10% improvement. It's great, it's fine.

Flow is a step up the work of change. I'll give you a couple of examples. [McKinsey](#) did a ten year study of top executives. They found them five times more productive in flow. That's a 500% increase. It means you can go to work on Monday, take the rest of the week off, get as much done as your steady state peers.

Learning is massively amplified in flow, essentially a quick short hand for learning memory. The more neurochemicals that show up during an

experience, the better chance that experience moves from short term holding into long term storage. Flow is a huge cocktail for firing the most potent neurochemicals the brain can produce, for memory.

In studies run by DARPA with military snipers for example they've found they can artificially induce flow. They did this two ways. Once they did it with transcranial magnetic stimulation. They knocked out the prefrontal cortex. They found that snipers trained this way learned 230% faster than normal. Different non-military study run by Advanced Brain Research in Carlsbad, I don't know if you know these guys ...

Dave: I do.

Steven: Chris Berka's company.

Dave: In fact she spoke at my first conference on bio-hacking.

Steven: Oh, nice. She did a different exercise where they used ... Sorry, I didn't mean to jump out of the frame. They used a neurofeedback to draw up into flow. That's the one you took part in, right?

Dave: No, it wasn't that. I do a program called [40 Years of Zen](#). It's a week-long residential, serious heavy-duty brain hacking thing. It's related. You're moving all your alpha to the back of your brain so there's less in the front and then you let it pulse from the back to the front.

Similar thinking around letting the brain do its thing.

Steven: Chris found in their research they could train novice marksmen up to the expert level in less time. You're literally getting a 10,000 hours needed to get to mastery. Flow can literally cut it in half. That's amazing. That's different from everything else, we're talking self-help-wise.

Dave: I've got to call her because I'm doing tDCS to train myself to be a better archer right now. I wonder if I need to talk to her about it.

Steven: They've worked with archers. If you could watch, she's got a TED talk that just came out. They've got archers in the TED talk. She supports the archers.



Dave: I've got to call her. She's awesome. Sorry to take you off track. That's beautiful. Keep going.

Steven: The thing to know and we can come back to this later because I'm sure you want to talk about brain hacking. There's a flipside. The five neurochemicals. These are the most addictive neurochemicals the brain can produce. Flow is the only time the brain cocktails them all at once.

These are very very addictive. If you start going down this path and you start producing more flow in your life and you don't know what you're doing and something goes away, you can find yourself in the deepest darkest most suicidally dangerous depression possibly. You really need to know what you're doing on flow.

I always say, as kids we were not taught how to play with fire. We're told not to play with fire. We don't know. Flow is definitely, it burns twice brightly. You will get from A to B far faster but you've got to know what you're doing because there are consequences. This is not, take two pills and climb Everest in the morning.

Dave: We're still looking for those pills though, right?

Steven: Of course we are.

Dave: There's five neurochemicals and there's some lifestyle design things. I see you live in Taos. You run a dog sanctuary. What have you done to put your own life, or to engineer a flow state in the environment around you in your own life?

Steven: Before we talk about the specifics of the triggers, which are gateways into flow. Creativity, there's a creative trigger, huge gateway into flow. The environmental triggers, all of our work there was done by studying action adventure sport athletes which is kind of the core idea We can talk about why.

One of the things we've learned is that risk is an exceptional trigger. This can be physical risk, mental risk, creative risk, social risk. For big wave surfers it means paddling into a 60-foot wave. For the shy guy it

means crossing the room and talking to the pretty girl. It's relative to everybody else. You can use it every which way. Risk is a trigger.

We don't know exactly why, though I think it just has to do with focus and attention. Altruism is a trigger. There is a altruism based flow state known as helper's high that Allan Luks who founded Big Brothers Big Sisters discovered back in the '90s.

It's a little weird. Normal flow states for neurobiological reasons usually only last 20 minutes to a couple of hours. The neurochemicals drain out. It takes a lot to replenish. One of the great mysteries of flow is helper's high can last for days. When we talked about my flow state for [A Small Furry Prayer](#) that lasted for two weeks, nobody quite knows how that's possible. Same mystery as nobody quite knows how helper's high lasts for days.

To answer your question, what I did is I threw everything out in my life. I only do things that and I only basically do three things in my life: I write, I throw the me carcass down mountains at high speeds either I'm mountain biking or I'm skiing, any other way I can, and I work with dogs, very very sick and elderly dogs. Altruism, creativity, risk. That's essentially most of my life.

I have basically built my life around the state. When we talk later, we'll talk about action adventure sports athletes and I'll refer to them as the best flow hackers in the world and we'll talk about why in a second. When you look at what they've done, the reason they have become the best flow hackers, the reason they're so good at this is they've surrounded their lives ...

If you spend time with these guys, not only ... The day is spent on the hill. They get off the hill and they go play music or they do other creative things, on and on and on. You surround yourself with flow triggers.

Businesses, by the way, that are really good at this do the same thing.

Dave: This is fascinating. A lot of the spiritual traditions talk about how service to others is a key to being in better states for lack of another word. Do you think that's because of flow state connections?

Steven: For sure it's because of flow state connections. What's interesting here is, it's twofold. Because one of the things that happens in flow ...

Some of the neurochemicals that show up, you get dopamine, norepinephrine. These are performance enhancing reward chemicals. You get endorphins. You get anandamide. You get serotonin. All performance enhancing reward chemicals. They all serve social bonding functions.

Norepinephrine, dopamine, that's romantic love essentially. Serotonin is a social bonding chemical. Endorphins is maternal love in children and familiar love and friendship love in adults. Anandamide is essentially the psychoactive that's released when you smoke pot. It gives you that, "Bro, I love everybody," sense.

All of these chemicals really expand social bondings. The important thing about altruism is, not only does altruism put you into a flow state but it expands empathy. The flow state itself expands empathy.

Psychologists talk about this and they say, people are more complex on the other side of the flow state complex. It's a fancy way of saying you're fundamentally altered. One of the ways you're fundamentally altered is by becoming more empathetic.

What's interesting about this: we were talking earlier about soldiers is obviously the military's crazy about hacking flow. It's massively enhancing performance. They want super soldiers. What's interesting and where I don't think they're going to get as far as they think they're going to get or not for a little while at least is you can't make a super soldier super empathetic. It's working across purposes. A super soldier can shut that portion of the brain down, not be more robust.

Flow may actually not be the super soldier cocktail that the military thinks it is.

Dave: There's a neat story about a samurai. I can't quote the exact source of this, but this is from Japan obviously. This is a samurai whose master was killed. He went across and hunted down all the people from the other group that had done this. This could be a fable too.

When he was about ready to strike down the final leader of the clan that had killed his master the guy spit in his face. He immediately stopped and put his sword away and said, "I'm not going to kill you now because when you spit in my face it made me angry. I'm not going to kill in anger. I'm going to kill you tomorrow, not in anger." He walked away and of course the next day he came back and killed the guy.

I do tend to think for military applications, if you can teach people to not go into the fight or flight mode that it's written about so much and to remain conscious and aware, and if they are doing something that that believe is in the best interest of the world, that they probably can be in a flow state and do that. It would be a pretty radical departure from the survival mode that most people find themselves in. That would be a different kind of training.

Any thoughts on that idea?

Steven: Yeah, you hit on something. Flow follows focus. The first thing you need is massively amplify focus. We know, when people talk about, "You need passion to create flow," or "You need a lot of belief to create flow," maybe. What you really need is to pay a whole lot of attention. It turns out that we pay a lot more attention to things that we believe in and are passionate about.

The idea that we're really deeply passionate about it, it's nice. It's important, but it's really a focusing mechanism. We're using that emotional energy to drive focus and that's why it leads to more flow.

Dave: That makes really good sense.

Steven: It's a good point. You believe patriotism perhaps could override the empathy but at a certain point ... Flow is really different in terms of ... All right. Let's talk a little more neurobiology and get a little deeper answer.

Dave: Center yourself on camera just so people watching on youtube can see you. You're off to your right pretty far. There you go.

Steven: This better?

Dave: Other way, sorry. Your right ... There you go. Now you're good.

Steven: We talked about this earlier. The frontal cortex shuts off. It's called transient, meaning temporary, hypofrontality. Hypo is the opposite of hyper. It means to slow down. Frontality is the prefrontal cortex.

One of the reasons, for example self disappears. Your sense of self, your inner critic, that nagging defeatist voice in your head, that's your dorsolateral prefrontal cortex. It's a specific part of your brain. It shuts off in flow. We feel this. There's a liberation. It's freedom.

One of the reason creativity gets so massively amplified in flow is because the part of your brain that's always second guessing your good ideas gets turned off. It's also one of the reasons you can perform at a higher level because the part of your brain that would go, "Hey, don't do that. That's probably really dangerous," that's shut off too.

Dave: That's the core of the training that I do. It's you've got to get a hold of that voice and have a finger around, a grip around its neck all the time.

Steven: Totally, absolutely. Time changes. Time slows down or speeds up on a flow state because time's calculated all over the prefrontal cortex. When parts of it start to wink out you can't separate past, present from future. You can plunge into a, what psychologists call, the elongated now, the eternal moment.

If focus and concentration stays really ... If you stay in that flow state for long enough, the activation of the shutdown can go out of your prefrontal cortex and into your other lobes. If it goes into the right parietal lobe, what happens is the part of your parietal lobe that helps you orientate in space, its nickname is orientation association area, the OAA. This is what helps you navigate through a room.

People who have brain damage or a stroke to this area, they can't sit down a couch because they don't know where their leg ends and the couch begins. In flow this portion of brain, deep flow, can totally shut down. When that happens you can no longer separate self from other. That notion of becoming one with everything, that oneness that spiritual leaders talk about, experience of unity, cosmic unity that's a real thing.

It's a part of your brain that differentiates self from other, turning off. At that moment in time you feel one with everything.

That is a byproduct of standard biology as we know from all the world's spiritual traditions. That's a fairly powerful empathetic experience.

Yes, patriotism and belief in those ... can prompt some of the empathy some of the time. In really truly deep flow experiences you literally are going to feel one with everything. It is going to be a very real and profound experience. We know this because every mystical tradition [inaudible 00:23:29] to the world has this experience at its center.

You're not going to be able to overwrite that. Ultimately flow will win, will trump the patriotism, I believe. I have no proof but I'm kind of talking out of my butt to just think about this. That is a definite fact.

Dave: When I talk with soldiers, a few of my coaching clients are former military. Just from talking with various experts, it seems like even more so than patriotism it's, "My brothers, the guys next to me." The idea of being selfless, the idea of service to others, like you're doing this because it's survival not of you but of your tribe.

Steven: It's one of the great hacks the military figured out in the latter half of the 20<sup>th</sup> century. You've got to remember. Go back, look at Patton. Look at Patton's speech, the point of war is to go out and kill the other motherfucker before you get killed. That's what he says.

That was what the army was, go on and kill the enemy. They realized that, "Kill the enemy," is not at all that motivating. They switched the whole theme and it became, "Protect your brother." Protect your brother is terribly motivating. It's a simple flow hack. It's a good example of a flow hack, by the way.

Dave: It's really interesting this service to others thing you brought out because you made me understand something. The reason that I started writing [\*The Bulletproof Executive\*](#) was because I just thought it was frankly unfair that I had the money and just the ability to learn a lot of the things I learned. I was just regretting that I didn't have any info to guide me to speak of.

I'm like, I'm just going to write it all down and charge people. The writing happens often in flow. What also happens is people would send me an email, "Oh my god. Everyone in my family just lost 30 pounds, including my teenage daughter," stuff like that. I'm like, wow. I feel those when they come in. I realize that the knowledge is helping people. That increases my state of flow. It's self-replicating because every time you help someone and they're like, "Hey, it helped," at least for me, I feel more motivated to do more writing and all that.

Steven: I'll be totally honest with you. I like animals more than I like people most of the time. I used to run a phenomenal non-profit that worked with teenagers in the inner city. It was with the LLA, it was organization, it was a great thing. Except I had to work with people. I hated it. The dog thing came after that.

Literally my level of flow has always been about the ideas. I want more flow for myself and my friends, things like that. Really my altruism goes towards animals. I gave a speech. This was, let's say 2011. I think it was one of the first major flow talks I ever gave. I've given smaller talks in smaller groups and done some consulting work but I've never given a big talk.

There were all these people in the room. I gave my talk. This 70 something year old woman who had been in a horrific car crash and could barely walk came to me afterwards. She was like, "You know, I was all ready to give up. Then I heard you talk. If you can do that, I can do that." Something dawned on me that this stuff, this fetish of mine that I was obsessed with, for totally personal reasons, actually had an application in the real world for other people. I was totally shocked by this.

Dave: You ended up inspiring people kind of despite yourself.

Steven: Despite myself, absolutely.

Dave: You said totally personal reasons. I have a pretty good feel about what actually drove you to start looking for the flow state. Are you up for talking about that?

Steven: Yeah, sure. Happy to tell the story. You know the story. When I was 30 years old I got lime disease. You know. You've talked about this.

Dave: We have that in common.

Steven: We have this in common. If somebody's listening doesn't happen to know what lime is, let's just talk about it. Picture the worst flu you've ever had crossed with paranoid schizophrenia. That's pretty close. I was in bed for three years. I was 10% functional. My brain was totally shut off, no short term memory, no long term memory. I couldn't write, I couldn't do anything. I couldn't even read because I couldn't remember the beginning of the sentence by the time I got to the end.

So much physical pain I couldn't walk across the room. The doctors had pulled me off drugs. This was early days in lime research. There was really one drug. My stomach lining started bleeding out. That was the end of it. They were like, "We don't know if you're ever going to get better." I essentially bankrupted myself looking for alternate cures and nothing was working.

I was going to kill myself because all I was going to be from that point on was a burden to my friends and my family. I was not a functioning human being at all. I was lucid for half an hour a day. The worst point of it, a friend of mine shows up at the front door and says, "We're going surfing." I looked at him, I was like, "You're out of your mind we're going surfing. I can't walk across the room. I can't make it to my kitchen." "We're going surfing."

She wouldn't shut up and wouldn't shut up and wouldn't leave. Finally I was like, "You know what, I don't care. We'll go surfing today. What is the worst that could happen?" They literally had to walk me to the car. They put me into the car. This was in LA. We went to a place called Sunset Beach which is really like the wimpiest beginner wave in the entire world. It was summer so the top waves were even smaller.

The tide was really low. It was a crap day. The waves were two feet high. They gave me a board the size of a Cadillac, the bigger the board the easier it is to catch a wave. They literally had to walk me out to the



break. People had to hold my arms and kind of carry me out to the break.

I got out there. I was at it about 30 seconds. The wave came. It had been a really long time since I had surfed at that point. Muscle memory seemed to take over. I spun my board, on a paddle place and I popped up. I popped up into an entirely new dimension. I'm standing on my board and I've got near panoramic vision, time has slowed down, and most importantly I feel great. I feel better than I've felt in three years. My muscles don't hurt. I'm clear headed.

That way it was astounding, quasi-mystical. I caught four more waves that day. After that I was so disassembled. They took me home. They put me into bed. People had to bring me food for 14 days. The 15<sup>th</sup> was the day that I could move again. I got back in my car and I went back to the ocean and I did it again.

Over the course of about six months, when the only thing I was doing differently was surfing, I went from 10% functionality up to about 80%. I didn't know what the hell was going on. Worst, when I was surfing I was having these quasi mystical experiences in the waves. I'm a science guy. I don't have mystical experiences. Lime, as you know, is only fatal if it gets into your brain.

I was certain that the lime had gotten into my brain. Even though I was feeling better I was losing my mind and I was actually dying anyways. That started out as a giant quest to figure out what the hell was going on with me. Very quickly I realized a couple of things about flow states.

One, they jack up the immune system. All the neurochemicals released in flow amplify the immune system. More importantly, to a guy with a chronic autoimmune condition. Lime is this; it means your nervous system is going crazy. Flow also resets the nervous system back to zero. It calms it back down. It's incredibly calm. All the normal stress chemicals in the brain, cortisol, norepinephrine get flushed out during a flow state, so the nervous system calms back down, which is why I came back to health.

Very quickly I started to see the same things. Once I started to get these flow states while surfing, they started to show up when I was writing which was a big deal to me because I could work. I had bankrupted myself during the time to cure myself of Lyme. I couldn't work. There was no way to make money, but suddenly I get into these flow states while writing.

Flow is more like neuroplasticity if anything. You train it. The more flow you have, the more flow you have. The flow I was getting while surfing was helping me get into more flow while writing. Suddenly I went from half an hour a day of writing to four hours a day. I suddenly had a career again and I could begin to fight my way back.

You can't play around with ... I had used flow to get from totally self-opt-out back to normal. Once I got back to normal we discovered that, wait a minute, this is pushing me really far really fast. Weird things were happening. I was seeing it in my surfing. I would go out there and I would do moves that I didn't know how to do. I had no idea how to do moves. I'd get in a tricky situation in a flow state and suddenly I was doing floaters and weird ... things I could not do, didn't know how I was doing. They were pouring out of my body.

I was like, I wonder if you could get those effects in writing. Obviously the [A Small Furry Prayer](#) story's answer is yes, you can get them anywhere. It took me a while to know that. This was the beginning of the flow research. Over 15 years this is what led to the [Flow Genome Project](#) and everything else.

Dave: Wow. I'm really glad you mentioned the Flow Genome Project. Can you tell me a little bit more about that? I think people listening in their cars and all may not know about it. What is the [Flow Genome Project](#)? What does it have to do with mental cognitive and physical performance?

Steven: Let me start off a little bit about what [Rise of Superman](#) is about because it will make the [Flow Genome Project](#) make a little more sense. [Rise of Superman](#) starts with action adventure sports athletes. The reason it does is if you look at action adventure sports, surfing, skiing, rock

climbing, etc. as a data set. We take out all the glamour, everything else. Just look at the data.

What you see over the past 25 years, or past one generation, is nearly exponential growth in all performance. That's performance from when life is on the line. The most rigorous, exacting, dangerous forms of performance that there is. Nothing like this has ever happened before.

Sports performance, as you know, is governed by evolution. Slow, steady plot in the curve, you get a linear line. Nowhere in history do you get an exponential curve. It doesn't happen that way. The question is, why is it happening now in action adventure?

Let me give you an example by the way because it's helpful. Surfing. Here is a sport that is 1000 years old. From 480 to 1996, the biggest wave anybody ever surfed was 25 feet. Because above that is considered impossible. You just can't do it. It's beyond the laws of physics. It's just unridable.

Today's surfers are pushing the waves that are well over 100 feet.

Dave: You get guys like Larry Hammilton. You can see that. It makes my spine tingle.

Steven: Snowboarding is another one. This is, 1990, the biggest thing anybody's ever jumped is the Baker Road Gap. It's Mt. Baker. It's a 40 foot gap over a road. The biggest thing anybody's ever jumped. Shawn Farmer cleared it. People thought they're out of their mind.

From 1990 to today, I was just telling you about Travis Rice, another pro snowboarder, a couple of months ago when we were shooting our videos. He told me that he believes he's cleared stuff that's 220, 230, 240. When in the history of the world does athletic performance quintuple in a decade or quadruple in five years? It's absolutely nuts.

Freestyle motorcrossing. At the beginning when they mention the motorcycle to almost the middle '90s, the backflip. The Holy Grail, it's impossible. Nobody's this is the way of the bike. Then in 2002 two

different guys lay down backflips which is amazing enough, but within four years, four year later they get to the double backflip.

We went from the birth of the motorcycle to the backflip. This impossible thing, it takes 50 years. Then we get to the double backflip in four years. Are you kidding? The question is of course what the hell is going on.

The answer is, as we've alluded to it earlier, these guys and gals have gotten better at hacking the state of flow than anybody else in the rest of the world. It's really fundamentally ... Necessity is the mother of invention. What has happened, the level of performance has gone up so high and so fast, literally these guys if they're not in flow they're in the hospital or they're dead.

I say in the [Rise of Superman](#) it's flow or die. That sounds like this gross hyperbolic exaggeration. It's absolutely not. You're either in flow or you're going to the hospital. These folks have gotten really good at hacking flow.

You asked what the [Flow Genome Project](#) was. [Flow Genome Project](#) was a collection of people. We came together originally because we wanted to advance flow state research. It was until fairly recently, one of the things I've discovered ... Two things I've discovered.

One I discovered, nobody was looking at action adventure sport athletes. There was data that said ... I'll give you one example. When they look at regular bat and ball sport athletes. They found that flow was an occasional rare experience in an athlete's career. It always shows up during gold medal performances, world championships, always there when somebody's winning. It's pretty rare and they tend to define them very specifically.

Pele, in this great interview he gave with the New York Times years ago, talked about having one massive flow state for his entire career. They did a study on the Cheat River in West Virginia where they looked at every kayaker, novice to expert, who got in the Cheat River in a 24-hour period. Every one of them experienced flow.

You're talking about rare and occasional to almost near constant. We wanted to use action adventure sport athletes as a data. We wanted to study them, to figure out what they were doing because it was clear that they were the best at this and we didn't know why. That was one thing I wanted to do.

The other thing, in those 15 years of research both myself and the other people involved in the [Flow Genome Project](#), we discovered that the psychologists were not talking to guys working on neuroelectricity, were not talking to people working on neuroanatomy, were not talking to neurochemists, on and on.

If we're really going to map flow, we need to map psychology onto the neurobiology onto the physiology, for the complete map.

Dave: The whole system, not just a piece of it.

Steven: That's the goal of [Flow Genome Project](#), to create that. We're calling it a heat map of flow. The reason is we only know about these 15 flow triggers, but if we get the whole map laid out, we can figure out where anyone, any personality, anyone ... We know it's ubiquitous. We just know it's certain type of people get it in certain ways.

We want to create a map that says, this is the exact way. You can get in right here right now. Basically open source ultimate human performance.

Dave: That is a grand and amazing goal, Steven. That's exactly what needs to happen. The fact that you're pulling people together from different disciplines like that is critical.

I certainly know some things about creating it from an electrical perspective. I wonder about drug perspectives. You can increase those five neurotransmitters through a variety of things like.

Steven: As you probably know each of those neurotransmitters has a drug analog. If you snort cocaine all that happens is dopamine gets released in the brain. Brain, serotonin is ecstasy, blabla.

Here's where things get interesting. These five neurotransmitters, if you were to cocktail the street drugs, be it coke, speed, ecstasy, marijuana, and heroin. You'd end up in a coma or probably drooling dead in a coma, take your pick. They don't cocktail artificially.

The brain cocktails them naturally. For example, if you go out and you do cocaine and ecstasy at the same time, the cocaine, the dopamine, is more powerful than the serotonin. It will swamp it. You won't feel the ecstasy at all. You'll feel the cocaine.

Somehow you can get all these things naturally from the brain. My answer to you is it does seem pharmacologically that there's a way to hack this stuff. I think we will get there. The problem as you know is we've gotten very good at neuroelectricity because we can now do all kinds of great stuff with EEG. We've gotten much better at neuroanatomy, fMRI etc. They're getting better.

Neurochemistry, we're good. We're a whole of a lot better than we were. We still can't measure neurochemicals in the brain beyond the blood-brain barrier. We're working on microsensors. Who's on our board and works at, they are working on really high level microsensors that can detect all kinds of neurochemicals in the brain.

Even if they get them, can I implant them in you? You know what I mean? How you'd run the test? We don't know how to get the information we need to do the pharmacological hacks yet. That said, I probably shouldn't say this on air, but what the hell, we're going to have this conversation honestly. If you go out and you talk to people, what is the most frequent flow hack out there? Everyone will tell you it is a long bit of aerobic exercise. You basically run or jump rope or bicycle up until you get that endorphin released.

Basically the moment pain goes away you stop. You then follow that in espresso shop with a bong head. They call it the hippy speedball. It's in every ski town. Why would this cocktail actually work? Because you're getting endorphins from the aerobic exercise. The cava coffee, as you know, you get a little bit of a dopamine firing and also focuses attention.

Then anandamide is what you get from the THC. It's essentially an artificial flow state.

Ski athletes use it all the time. People in ski towns use this stuff all the time before they go skiing. If you mix these cocktails, this particular cocktail, with risk, with physical risk you get that big dopamine push, it's tied in an instant flow state.

There are hacks for this. You can do pharmacological interventions or all that stuff. I've been in a conversation, I don't know who I was talking to recently, about precursors. Could you preload your body with all this stuff?

Dave: That's my approach. Tell me more about precursors because it seems like this is doable.

Steven: I have to tell you, honestly to the best of my knowledge nobody's done the work. One of the big things I wanted to start doing in the next year is figuring out what are the most important neurochemicals on the front end of flow. We kind of know what they are. Can you stack the deck by preloading with totally a mangle over the counter precursors?

Dave: It's mostly amino acids. I know the people. I know the research. We've got to talk some more after this podcast.

Steven: I know. I was going to say. We can team up on this one because it's a big area. It's a big blank spot on the map as far as I ... We have great matrix for determining whether or not people are in flow states. Those have been really well developed at this point.

The tests are not hard. These precursors, take them. Don't give them the precursors, see who gets more flow over a one month period.

Dave: I'm fascinated by your hippy speedball idea there. Obviously I know a thing or two about coffee. I believe there are some nuances in coffee that have an impact on this very peak state.

Steven: By the way I think you may ... one of the other things I was thinking is we could ... Because I think that your coffee, just looking at it, I haven't

looked deep enough under the hood, it seems like it boosts dopamine a little bit more, like an exaggerate ...

Dave: I would love to do a lab study on that.

Steven: What I'm thinking is maybe the hippy speedball with Bulletproff Executive coffee works better than regular coffee. Who knows?

Dave: I would bet a lot of money on that based on my own experience of flow states. Part of the model for flow states in my own work is that we have a reptilian mind. You can be in a coma and you'll still somehow breath and your heart will beat most of the time.

You have your mammal mind which is where a lot of people spend a lot of the time. If you're in a sympathetic dominant mode, that's where you are. Then you have your prefrontal cortex called your human mind. Energy in the body is going to go towards survival and replication of the species first.

Which means you fill these from the bottom. The reptile brain gets what it needs first. The mammal brain gets what it needs next. Then the human brain. If you want to be at the very peak performance levels, using all of your human brain as much as you know how to use, you need to remove impediments to progress along the way.

The experience that I've seen and enough other people have seen with the way I process the beans is that those little nuances at the very top when you're trying to reach a flow state, you're trying to be in peak performance, there are things that can take you out of there, that appears in some coffee and not in others. This drove me nuts for years.

There's one more hack on top of this that's worth talking about. Getting endorphins can take aerobic exercise and all that stuff. The sleep induction mat which ... I'm not trying to push my products at all here. It's a mat with spikes on it. you lay on it and you feel like you're going to die because your body's like, "Oh my god, there's all these spikes that are going to penetrate my skin." They don't." After about three minutes it stops hurting and then the body goes into this profound relaxation



state, creating the same endorphins that you're getting from this exercise.

I use it to go to sleep at night. Because you want to have this wave.

Steven: I will tell you also. This I learned along the way of flow. The strange things you learn along the way. In the S&M community there is an S&M, pain triggered flow state they call flying. It's heavy heavy on the endorphin release brought on by pain. It's essentially pain triggered.

Even S&M at the root at that, you're still looking at flow.

Dave: You must go to all the good parties, Steven.

Steven: You've lived in New Mexico. You know nobody has parties here. I live in the middle of nowhere.

Dave: Great answer. That's hilarious.

Steven: We climb mountains.

Dave: I did not know about that. That's super funny.

Steven: I didn't either by the way but when I started doing the research ... It was funny. Actually in coding, computer coding produces tremendous amount of flow. If you go to the Oracle developers' series.

Dave: I've never thought of that. My background's computer science. Oh my god, it's been here the whole time. That's awesome.

Steven: Let's take it one step further. One of the people I interviewed who's a big tech executive who's been around Silicon Valley for a long time said, "Look at Silicon Valley. The three things that built the Valley: software design, network design, and circuit design."

You cannot do well without flow state. What he said is, "If you're looking for a non-athletic, non-action sport exam of what happens when a bunch of people start getting the flow regularly, Silicon Valley's not a bad place to start."

Dave: You just taught me something I never understood. I taught four nights a week during the rise of modern web as we know it about web and the internet infrastructure. The reason now, in addition to the giving back, teaching a room full of people who are advancing their careers, but also you're drawing stuff on a board. You do it and make it as doing network design.

I was getting that high and I was getting the high from teaching people, helping them in their careers at the same time. I was buzzing when I was done with that. I'm like, I've never even done this. This is a killer.

Steven: Anybody who's got a career whatsoever in public speaking. People think the lure of public speaking is ego gratification.

Dave: No, it's not.

Steven: No. You get up on stage. Your conscious mind is gone. Every time I give a talk invariably I'm at the end of my talk and I'm like, looking at my last slide. There's a, and I come back in my body and I go, I must have skipped half the speech because there's no way I'm here.

It's a total deep flow experience. The addiction to public speaking is the flow. The ego stuff is all besides the point. You get into deep flow doing it.

Dave: Wow, you get it. In fact I have to look at a video of one of my talks because I don't usually remember what I said. There's peaks and valleys in there. It doesn't all stick because you're pouring everything you have into it. I guess like a pro surfer would although I never thought of that before.

Steven: The goal of [Rise of Superman](#) ... We did it with [Rise of Superman](#). We said, look, we can basically take code what these athletes are doing and apply it across all the in society.

That's essentially the goal of the book. It's to say, these 15 triggers these athletes harness, here's how you apply them anywhere. We see this. You see companies like Toyota, Patagonia, when they were around. These

companies, Microsoft even, they have flow at the center of their corporate philosophy.

They're not as great at it because there's a lot of things that are off. People don't understand about flow and we really didn't get a neurobiological picture for the past five years or so. I think more and more, flow is ...James who is a VC guy at Greylock Partners, venture capitalist at Greylock Partners, wrote an article in Forbes where he talked about flow state percentage which is the amount of time employees spend in flow as the number one management metric for building great innovation teams. I think it's just the number one management metric period.

Now that this is becoming measurable and hackable, it's going to start. I think we're looking at the next giant business revolution. It's going to be interesting because you talk about something that massively amplifies creativity, individuality. A lot of the things that don't sit exactly square with business the way it was done last century. It's really going to forward businesses into the 21st century.

Dave: One of the things that I think Google's doing in that space is fuel for flow state. They're feeding their people reasonably well. You go to Google. You can get access to much higher quality nutrition. It seems like athletes are always looking at diets and all, that when you give the brain the things that it wants, I'm not talking precursors here. I'm talking fat and protein and glucose, things like that, especially when they're relatively free of the things that tweaks, small, negative changes in brain behavior.

At least it increases the odds of flow happening if it's not a cause. Do you buy that line of thinking?

Steven: I absolutely buy that line ... My partner, Jamie, I cofounded the [Flow Genome Project](#) with, who has done way more of the flow consulting work with businesses than I have, one of the things he always says when he talks is, "A great deal of what you need to know about flow you learn in kindergarten. Get plenty of rest. Eat right," really basic stuff.

If you're not dialed that way it's not going to work. For example, let's talk about getting plenty of rest. You talked about the fear response. The amygdala runs the brain. Your fear reaction runs the brain. Flow, you have to get past the fight or flight response. You've got to be able to focus through that to get into flow.

When you have not slept well enough, when you don't have proper energy reserves and you're facing a difficult challenging dangerous hard whatever task, your fear level is going to rise because your body is not prepared. It's going to be harder to pass through that and get into flow.

Dave: It makes so much sense. Amygdala dominance, which is certainly a state where I lived a lot of my life younger and a state where obviously lime disease can help you to be. It's unpleasant. It's so common. I think a lot of things people do on a daily basis encourage that.

Steven: Amygdala is funny. Just so your listeners can walk away with one flow hack that is useful, one thing that they can take away from this that will really make a difference in their lives. It's interesting because it has a lot to do with fighting against the amygdala.

The biggest mistake most people make about flow is they think it's a binary: you're either in flow or you're out. It's like a light switch. Not true at all. Flow is actually a four-stage cycle. A number of these stages don't feel flowy.

At the front of a flow state you're in the stage named struggle. It was Herb Benson, the Harvard cardiologist, who named it struggle. He did a lot of the neurochemical work on flow. It's a struggle because you're overloading the brain with information. As a writer this is my research base. This is where I'm trying to figure out the structure of what ... You are getting frustrated.

If you're an athlete you're learning a new skill. You basically want to take this almost to the point when you're about to lose your mind and then pull back. This is when all your stress hormones, cortisol, norepinephrine, adrenaline, these are all rising during this period.

Second stage is ... By the way amygdala dominance ... The second stage is relaxation. You have to take your mind off the problem completely. If you've been working on an article all day, you've got to go for a walk or a run or go build an airplane model, whatever would shut the mind off. If you don't have enough self control over your amygdala you're not going to be able to get your mind off the problem.

You need that level of fortitude just to get the relaxation response. What happens during the relaxation response, you've got a global release of nitric oxide, which is a gas, a signaling molecule everywhere in your body. It drops all the stress hormones out of your bloodstream and instead forces the release of dopamine, serotonin, anandamide, etc., all the good chemicals that you want. [inaudible 00:53:52] Then the third state, the flow state.

Here's more amygdala stuff, and this is the most important thing: after the flow state there is a fourth stage in the cycle. It is a memory, learning consolidation phase. As we know flow massively amplifies the learning and memory. We know this. There's a catch to this.

Those neurochemicals are expensive to produce. It takes a little while for them to replenish. You go from feeling like absolute superman, "I can do anything," in a flow state to feeling absolutely horrible because all the feel-good neurochemistry is gone and you no longer feel like superman.

This is a good and a bad thing. We'll come back to the good in a second. The bad news is most people don't understand that there's a cycle going on. They get to the point where they don't feel like superman anymore. Everything they've imagined their life could be in a flow state comes crumbling down and they get really anxious, really gripped. You have to get back in the flow which is what you want.

You want more of that superman feeling. The only way to do it is to move from this memory, this consolidation down into struggle. If you're super upset about not being in flow, you don't have the emotional fortitude to just kind of push through that, you're never going to get up for the flight of struggle.

It is a good thing because you get crazy wild ideas in flow. It's really good to check them out in the cold light day. After the flow state is done, and brainstorming in the flow state, you always want to go back and read your stuff again and just see what's good and see what's bad because not every idea you're going to come up with in flow is great.

This state actually gives you ... There's a recovery period where you can do that. There's an upside to this stuff intellectually. The downside, and where most people get really hung up, we've talked earlier about the dangers of flow. People don't know about the flow cycle. When they start using these 15 triggers to produce more flow in their life, they don't know that there's this fourth stage in the cycle. If you can't locate yourself on the map you're not going to get into flow easily then because you're going to not be able to check your amygdala.

Dave: Wow. This is useful, really useful information for people so that after you've fallen out of flow, you want to go right back to struggle so you can jump back in.

I think this might be one of the longer podcasts of the last 100 or so because normally we would go around 40 minutes, 45 minutes. We've gone just about an hour. I feel like I could talk to you for about two more days. Steven, give us the url for your book and the launch day. We should send an email out to the people who are Bulletproof because I can't imagine anyone who listens to this podcast or reads the [Bulletproof blog](#), who wouldn't just completely salivate over reading your book.

This is as totally targeted as anything I've ever seen. Give us your url and how people can find you.

Steven: Where you want to go is [riseofsuperman.com](#). If you go there now, from now until March 4<sup>th</sup> when the book launches, huge crazy presale campaign. We're giving away everything from flow diagnostics to invites to live events to a full swag bag of cool stuff.

[Riseofsuperman.com](#), preorder copy. I think you can get 20% off right now. Book's out March 4<sup>th</sup>.

Dave: Lovely. Steven, thanks again. If this podcast's benefitted you and you're listening right now please just take a second to go to [iTunes](#) and tell other people that you like it, or go to [Facebook](#) and click like. These are the things to let other people learn more about amazing stuff like what we've just heard from Steven Kotler today.

Steven, oh, I almost forgot. You would have been my number two time ever. The question I ask everyone, we've got to do this even though we're over time. The top three recommendations for people who want to perform better. It doesn't have to be just from your work. Your entire life's experience, for people who want to kick more ass, three things.

Steven: Oh my god. Really, and we're out of time?

Dave: Oh yeah. No pressure.

Steven: One, read [Rise of Superman](#). More flow, more flow, more flow. Two, drink [Bulletproof Coffee](#).

Dave: Oh come one, really? I love it but ...

Steven: Top three things if you want to perform better. First thing, it's all about flow. People compete against the wrong things. People compete against their peers. Never compete against your peers. Figure out who's the very best in the world at what you want to do, that's your competition. Everything else is besides the point.

To me it's extreme goal setting, relentless hard work, and I don't know. I'm going to give you one final tip that I think is real, that has worked very well for me.

I have discovered in myself and I think any successful person who I've ever talked to ... Things that you succeed at are just the things you stick with. Eventually you will always try it out as long as you stick with it. What I did, is I reduced my life to six core things. All of them produce flow. Literally everything else, if it's not one of these core things, I don't bother. It's a waste in my time. I've reduced it down to the things that matter most to me, the things that for my success are absolutely important. I don't do anything else.

All those things except for one, which is the marketing, PR component of all this that I have to do, and that's the part I don't love, though this is fun, a lot of fun. That's my number one tip. Beyond that it's more flow, more flow, and drink coffee.

Dave: Love it. Thanks again, Steven. We'll make sure to put links to your book on the site as well. This is going to be an exciting podcast for people to hear. Thanks again for jumping in with both feet and for the work you're doing. This stuff is incredible.

Steven: Thanks so much. It was fun being here.

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