



Episode 221:

Child: Welcome to my Mommy's podcast.

This podcast is brought to you by SteadyMD, and I have a story to tell you about them! I love this concierge medicine company because they have an amazing team of doctors and they match you with one who shares your values and your health ideals. This way, your doctor knows your full medical history and is available any time you need him or her for calls, video chat or text questions, which is what I usually use. With the new family plan, you can ask questions about your kids, and this is where the story comes in. Last year, I can only just now finally now talk about this because it was so traumatic, there was an outbreak of impetigo in our neighborhood, possibly from a water slide that all of the kids in the neighborhood played on. And if you don't know, Impetigo is a type of staph infection on the skin and it was bad. There were 30 kids with skin infections all at once and it was pitiful to witness and they kept transferring it back and forth as it's highly contagious and can live on surfaces for weeks or months. So all of us were doing an extreme amount of laundry and cleaning and stay on top of it. All of my neighbors were taking their kids to urgent care or local doctors, and they were getting many opinions of the best type of treatment ranged from multiple courses of oral antibiotics, to topical antibiotic creams to both. Since I hadn't found a good doctor here yet and was so grateful to have my SteadyMD doctor literally in my pocket. While everyone else was sitting in doctors offices for multiple hours and multiple visits to see a doc, I was able to video chat mine, share pics of my kids and get his advice instantly. He already knew my preference is to avoid oral antibiotics whenever possible and he worked with me on a plan to tackle impetigo naturally and to only use topical treatments and save oral antibiotics as a last ditch effort, which we did not have to use. He was on call for the several weeks of the healing process to make sure there were no complications, he checked in with me every day and he gave me peace of mind during a stressful situation. I've used them so many other times for little things that require peace of mind and even for bigger "does this need stitches" type questions. I cannot recommend them highly enough. Check them out at steadyMD.com/wellnessmama.

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Katie: Hello, and welcome to the Wellness Mama podcast. I'm Katie from wellnessmama.com. And I am here today with Dr. Mark Cucuzzella, who I hope I'm pronouncing his name correctly, he is an Air Force Reserve Lieutenant Colonel, a practicing family medicine doctor, a professor at West Virginia University School of Medicine and he teaches continuing medical education courses on health, fitness, and running through HealthFit U. He developed the US Air Force Efficient Running program and most impressively to me, he has run competitively for almost four decades and has logged more than 100 marathons and ultra-marathon finishes. In fact, he now continues to compete and has logged an under-three-hour marathon for 30 straight years. I don't think there's many people in the world who can say that they have done any of those things. His new book "Run for Your Life" summarizes the science and the soul of running, nutrition, and physical activity to help you maintain a vigorous life. And I'm super excited to jump in and talk to Dr. Mark about things like barefoot running. Should our kids be wearing shoes? What is the role of movement and exercise in our life?

And also to jump into nutrition with a doctor who actually values that side of things. So Dr. Mark, welcome and thank you for being here.

Mark: Well, thank you, Katie, for having me on. It's finally a beautiful day here in West Virginia after I think it's been like a month of just solid rain. Everything is flooded and now the sun is out. So puts me in a good mood for the weekend.

Katie: Awesome. Yeah, me too. It's sunny here and I'm super grateful as I look out the window and get to talk to you and I don't feel like I can start with the bio like that and not ask you to lead off by just telling a little bit of your story because I think it takes a tremendous amount of dedication and consistency and commitment to be able to say the things that I just said in your bio and I'm so curious of your path and how you came to all of those different aspects of your career and your life.

Mark: Yeah. It's been many different paths, Katie. So, you know, sounds like you have very active kids playing outside. And so I was a normal, you know, kind of neighborhood rodent, you know when I was a kid, would just be outside, you know, digging holes everywhere and playing and active and played all the sports and, you know, got involved in running because I could actually run pretty well. And I stopped growing. I was a football player when I was little and, you know, was the running back but the sport outgrew me.

So in high school, I started to just run, which was probably good and bad because when I became a single sport athlete, you know, then I started to probably focus too much on that. And in a growing body doing any single sport, you know, for parents out there who culturally are driven to put your kids into elite travel soccer leagues at like age six, just kind of have caution because I don't think that's a good thing. But mine was kind of self-inflicted. I got some early success running and I just loved it. You know, I probably had ADD before they would call it a medical condition and medicate it. So my drug of choice was running. You know, I was always the kid who just could not sit still. You know, I was expelled from a couple grade schools actually because I would always get in trouble. And then, you know, I went to the local Catholic school and I think the fear of Sister Mary kind of made me toe the line.

But unless I could get out and run around, I was a problem child. You know, so luckily there was a sport for that called running. Did pretty well in high school, you know, running, but I was hurt a lot, went on to the University of Virginia and ran track and cross-country there. You know, like all college athletes, was hurt all the time, could probably hardly string together two months of training without being hurt. Went to medical school mostly from my interest in running injuries. You know, in college, I was like a Guinea pig of Dr. Daniel Coland who was this kind of mad scientist of running injuries. And, you know, I got fascinated by what he did. I'm like, "That would be kind of cool to do as a career." So that got me interested in science and medical school. I went to medical school. You know, and through that process, you know, I really enjoyed trying things to kind of make people well. I thought I was gonna be an orthopedic surgeon because that's all I knew was all of the injury stuff.

But I found my way into family medicine, which is, you know, general practice for the international audience and flight medicine if you're in the military. That's trying to keep populations well and healthy. You know, involves nutrition, physical activity. But back then I really didn't know much about that other than what we were told, you know. So we were all told back in the 1980s, you know, well, a healthy diet, of course, is a low-fat diet, you know, with food pyramid, carbohydrates, never eat an egg, you know, all that stuff that we grew up with. And I developed pre-diabetes about six, seven years ago and it made me rethink everything. But probably my first foray into realizing that, you know, at least half of what we've learned in medical school is wrong. We just don't know what half of it is right. So we're trying to find the truth. And I didn't make that up. I think it was the Dean of Harvard Medical School who said that at a commencement maybe 20 years ago.

But, you know, I had some pretty bad structural injuries on my feet about the year 1999, 2000 was running competitively and had really bad arthritis changes in my large toes, which are really important for running. So I had, you know, kind of a classic bunion, you know, my toes were bent in. My feet look like a track spike. And if you look at, you know, kind of a modern track spike, you know, it's pointed at the toes. It's very narrow. It squeezes your feet, spent a lot of time in that type of a shoe. And my feet took the damage, all those bones in my big toe were kind of fused, it didn't bend. And that affected my whole gauge. You know, my foot wouldn't act as a shock absorber. I didn't understand that much.

But they straightened my toe out a little bit with surgery, took out some of the bone but was told at that time, you know, you probably shouldn't run anymore, you know, find a different sport. You know, I write about this in the book, but there's something magic about if you're a runner and if any of your audience out there are runners and just love it and if I told you tomorrow that, "Okay, you just can't run anymore, period. It's done." I don't think anyone would accept that. You know, that would be like not quite a significant loss as like a family member. But if you think of the losses in your life that are like, "Whoa, that's unacceptable. You know, loss of spouse, your kids, you know, those... But if you're a runner and I say you can't run, that's like, well, I'm not gonna accept that. I'm gonna figure it out.

So a few months after that surgery, I actually started to study running because I knew that I knew nothing about running really other than all the mistakes I've made. I started to study biomechanics, footwear, understand the value of running slow. So, you know, any competitive athlete out there really doesn't know what slow is. You know, we just kind of go out every day and we work hard. That's the culture. So I embraced the slow and I recovered and I ended up, you know, running really well again, you know, with way less effort. And the year 2000 was my last running injury which was the surgery and, you know, now I think the only way I would get hurt running as if I stepped into something, you know, or had a traumatic injury. It wouldn't be like an overuse injury. You know, I think I've got enough headroom or margin of injury, you know, try to develop yourself to be kind of bulletproof in running.

I explain it in the books, all the different ways that you can get to that point. You know, but running should prevent us from getting hurt. It shouldn't cause us to get hurt. You know, I run around a lot now and I run every day so I can go do things, you know, with my kids that...you know, say I wanna ski or play soccer or play pickup basketball, you know, I shouldn't get hurt doing those things, you know. So if I run every day and do strength mobility work, then I can be a normal human even into my fifties and not end up with these injuries.

But that's a little in the background and, you know, I'm trying to teach this to my community. So I'm involved in a number of projects, grants in the community. You know, I own a small running store. You know, we have a large race in eight days that I co-direct. You know, so you're kind of all in on all these projects because change really happens from the bottom up. Meaning you gotta get people out trying these things. You could give lectures to students. That doesn't go very far, but you gotta get out there and live it and teach it to your community. Invest in that.

Katie: Absolutely. And I love that you started off by talking about movement in children because you also have children and I know just watching them that they are experts at just moving naturally. And they'll run, they'll sprint, they'll stop, they'll climb, they'll squat. That's play for them and they're doing essentially a really intensive work out every single day when I watch them outside the window while I'm here recording podcasts. And I'm so curious if you have any guidelines that you would recommend to parents. I love that you mentioned, you know, not creating children who are specializing too early on and I know based on the statistics we're seeing young athletes having, for instance, elbow injuries from pitching too much too soon or rotator cuff injuries or things that previously never existed for kids. And I joke with my friends as I have some friends who put their kids in dozens of activities and it's all about taking them to structured things and I joke kind of like that meme on Facebook, like, "Hey, I put my kids in an activity it's called go outside and play and meets every day." And they just get so much movement through that. But I'm curious if you have any more elaborate guidelines you can give for parents with kids who obviously have an interest in movement and in sports and that's wonderful, but making sure that we're also protecting their bodies and their joints, and their health long term as well.

Mark: Yeah. You hit the nail on the head there, Katie. Play is the process. Yeah, they play. Fitness is what you might gain from that. So play, by definition, is no outcome, right? It's purposeless. It's just you go out and you do it. You're in the moment. And that's really where it should all start. And that goes into adulthood too. You know, I mean, why do adults continue... Most people will start an exercise program because maybe they're trying to lose some weight or their doctor said they need to do it, but the ones who persist in it find something that really doesn't have an outcome. Right? They just get something from it that's not on their Strava feed or something or their Fitbit. That stuff might motivate you a little in the beginning, but it's not gonna keep people doing it day after day. They have to wanna do it. Like I get to go out, not I have to go out. You know, Gosh, it's a beautiful day today. You know, I get to go out and move today. Unfortunately, children these days, you know, they've become kind of zoo humans, you know, under house arrest, you know, a little bit of its culture. Some of it is built environment. You know, you live in a beach area.

So my first running was actually on the beach barefoot was where I did my first, what you would call like running to run and cover distances. I hopped into some runs with my older brother who was on the cross country team and we'd go to the beach for a couple of weeks in the summer and he would be doing his running and I would just hop in with him. And, you know, I think I was like 11 and on the beach, this was like my second or third run, you know, directed round because we play tag all the time and all that stuff. But we ran 12 miles barefoot on the beach just like that. And probably today just the way kids live, it'd be hard to find a kid that you could just pull out of the playground at age 11, you know, with bare feet on the Jersey shore and say, "Okay, run to the end of the island, that's six miles, turn around and run back.

You know, we didn't have power bars. I don't even think we stopped for water or anything. But that wasn't weird. It wasn't like dangerous behavior. That was normal and we didn't get overuse injuries. But, you know, it's like Kenyan kids, right? They run to school to and from school just to get there. Really, that's the only purpose. They're not training to win marathons. They just wanna get to school. But then when you line them up in a race one day, they've got this massive aerobic development. They've developed the natural movement patterns because they've done it bare feet. And that translates into any sport.

You know, if kids don't develop good movement patterns, it's really tragic. Now there's an epidemic of noncontact ACL tears, which is the anterior cruciate ligament, mostly of females because of their landing patterns and slightly wider hips. So they'll tear their ACL, you know, pre-puberty, which is really scary. That injury at that age, there's all this controversy, you know, do you fix it surgically? They're still growing. Do you wait until, you know, after puberty, and maybe they've developed arthritis? Europeans view the problem different, but we should not have those kinds of injuries. And I don't know what the true root cause is, but when the incidence is going up of these kinds of injuries, we need to look at multiple mechanisms of what it is that's driving that.

But if you're a parent out there and you got to get out there with them. I'm sorry. Like, you can't just sit and answer emails until you open the door and tell your kids to go out. So you got to get out there. The most important influencer on whether a child will be physically active is what would you guess it is? Is it the school policy? Is it the latest media campaign? Is it a Fitbit? What would you guess it is? If you have kids, what is the most powerful driver of whether your kid will go outside and play?

Katie: I would guess it's like any aspect of raising kids, is if they see you do it, not even just say you do it. I know in nutrition, it's if they see you eat it.

Mark: You parent, right? It's you. So when they're young, it's you. Unfortunately, teenagers, the biggest influence on their behavior is their five closest friends. So ultimately, you know, I've got a 13-year-old daughter now and a 15-year-old son. So for better or worse, just the way it is, my influence on them is still there. But they're starting to be influenced more by their peer group. So, you know, they're hanging in the wrong crowd. Maybe that's where, you know, maybe you do have to use a little parental wisdom and try to redirect them. But when they're five, you know, you go outside, bring the dog and just go to the playground, you know, that's powerful. Climb, you know, the little monkey bar gym with them and that's why you don't wanna be sick yourself. You know, you wanna be able to do that stuff with your kids.

Katie: For sure. And to add to what you just said, I loved it so much that the small shift of saying instead of I have to, I get to, I think that's a valuable tip in any aspect of life. I've heard that recommended by people. That's the only thing you change in just your mindset, it's amazing how you'll see that play out in your life. Just because we tend to resist things we have to do and we tend to look forward to things we get to do. And so I think that subtle shift can make such a huge difference for so many people. And I echo your concerns about all

these injuries, like I said, that we're seeing in young children and especially pre-puberty. I know the latest data I saw was that people, especially girls who have ACL tears, pre-puberty have a very, very high instance of arthritis early in life, like, in their 30s or younger, which is drastic. We've never seen this before with kids.

And I think you're right. There's a lot of components that come into play here. And certainly, I look at it from the nutrition side as my background. But I think there's also movement patterns, both in kids not moving enough. Like, you mentioned how much you were able to run 12 miles in one day as a kid. And my kids I think would actually be able to do that, but that's because they're running every single day, 10 plus miles in our neighborhood and they call it play. And we have standing, capture the flag games and tag games and they play a game called infection. And to them it's fun. But they're also exercising much, much more than most of us do.

But I think another thing, another issue that really comes into play there is potentially like the way that they are running and the way their feet are being formed, especially in kids whose feet are still growing. And I know that you are an expert in this and I'd love to hear your take on what kind of footwear, if any, our kids should be wearing, especially young because their feet are developing and from what I've researched, at least what's on their foot can actually impact how their foot develops. Is that correct or what's your take on that?

Mark: Oh yeah, definitely, Katie. So what you put on a child's feet, it's not like putting a sweater on like some piece of clothing. But just to give your audience a couple of really quick references. If you're interested in this concept of play, there's a wonderful book by Stewart Brown just called "Play," which just not that you wanna sit inside and read this book, but maybe put it on your audiobook, but it describes all of the brain chemistry of play, going back to ancestry. And another book was actually written by a former NBA player. His name is Bob Bigelow, and it was called "Just Let the Kids Play," amazing book, but it just outlines what's wrong with the culture today of these single sport, you know, kids are driven into, you know, thinking they need to be, you know, performing for college scholarships, you know, in the third grade. It's just so distorted.

But you read that book and if you're a parent who's kind of going down that path, maybe, you know, your kid's in the prep school, you know, in fourth grade and all the parents are like already talking to college recruiters, it'll make you pause and say, "Okay, am I crazy or are they crazy?" And you're right, they're crazy. So that is a powerful, powerful book. I would recommend everyone read it. Like, if you're a coach, maybe some of the parents out there are coaches. Your only job is if the kid wants to come back to practice tomorrow, you are a good coach. That is the most important thing. If they wanna come back, you're doing a kick-ass job. Technical stuff, you know, teach a movement. But if the environment is they want to come back to practice, that's amazing.

So the feet. So the feet have 26 bones, 36 different joints in the foot and ankle, 100 muscle tendon attachments, 4 layers of muscles. So the feet do things that I think no one really fully understands. It's kind of like magic because the feet are the spring of the body. So running is a mass-spring mechanism, meaning we use elasticity. We don't use power and labor. If you watch a kid run, it's very springy. You know, if you watch

them on the playground doing jump rope or hopscotch, it's very springy. So the foot is really the foundation of all that spring. So the foot's like the lunar lander in shape. You know, it's like a tripod and that has to be functioning well and that will decrease the impacts of the kinetic chain. So that can be decommissioned very early in life. So if we take a toddler, you know, say a two-year-old and we put them in a really stiff structured shoe within arch support and you're kind of decommissioning all of that musculature, tendons, fascia, which is all the connective tissue, you know, what's happening over time is you're detuning the spring, meaning it's dampening.

You know, if you have a spring that's functioning well and you brace it, it's dampening and then you get hurt and they tell you use an orthotic, it's dampening more. Then they say you need, you know, some other foot shoe device, you know, that's stiffer and harder and more supportive, they're dampening it more. So you don't wanna keep dampening the spring, especially from a young age. I've wrote a textbook chapter on this, which we can share the link it's on. It's linked from my book's website, runforyourlifebook.com. But actually, the study which was a seminal study was one done in 1908 by a gentleman named Hoffman. And he showed like back in those days, they actually used X-rays in shoe stores, you know, before we were worried about radiation and stuff. So that's how you would fit a shoe. You'd come in and you get a fluoroscopy, get an X-ray.

So he showed within four weeks of a sensible shoe, you started to change the direction of the child's first toe, the great toe. And when that great toe is bent in, you can imagine what that does to the foundation of the foot. So think of a stool with three legs and you chopped one of them off or shortened one of them. Now, you don't have this nice stable base. And that's what happened to me. My big toe was bent in, you know, 30 to 40 degrees. So when my foot hit the ground, it didn't have any spring left. So, you know, my knees, my hips, my IT-band, plantar fascia, all these different structures, back, took the load because my feet couldn't deal with that. So I had to create more power too because I lost...

You know, when you actually run efficiently, you know, you're about 50% efficient in energy return like a super ball. A tune super ball, you drop it to the ground, it doesn't come all the way back up, but it comes, you know, maybe halfway back up. But if you drop a hacky sack to the ground, you know, it's just like, thud, hey, that's not good. And you see it, you watch your kid jump rope and they're in this nice rhythm. All of them are in the same rhythm, but adults you won't see in that rhythm because they've decommissioned their feet. So if you're a parent out there, yeah, let your kids run around barefoot. That's the safest thing. And if they do need shoes, get them one that you could roll up and put in your pockets, you know, just something to protect them, you know, say it's winter time or, you know, yeah, they got to go to school and their teachers are gonna throw them out if they don't have a shoe. So you have something that covers their feet, is acceptable socially, you know, whatever your circles are, or activity. And if they need a sports specific shoe, you know, get the widest and most flexible you can.

You know, so most cleats are really dysfunctional for kids. Like, if you look at him, you know, 48-pound kid playing peewee soccer and you can't even bend the cleat, like try to bend these cleats. They're so stiff. And imagine that child who only weighs 40 pounds trying to bend that, you know, while they're running and they can't run well. You see him try to run around in these shoes and they have difficulty. So it's all like really simple, simple, simple. I mean, a shoe is let the foot do what it's supposed to do and the shoe is really just an

ornamental covering to allow the foot to develop. And you only get one chance to develop your foot, so if you've decommissioned it early in life, caused structural problems just by the shape of the shoe, postural problems because you've elevated the heel and now the child's adjusted their back and their hips, it's gonna be hard to reverse that because their movement patterns are gonna get mapped in very early in life and to kind of rewire that, takes, you know, however many thousand repetitions you wanna believe, you know, to rewire movement patterns. So you'd rather not mess it up to begin with.

Katie: For sure. And I'm wondering if this is partially why we're also seeing more... I know we see more knee and foot type injuries now with women. Do you think there's a connection between wearing heels a lot? I mean if a raised heel in a kid can make a big difference, does the same apply to adults?

Mark: Yeah. So if you're a female out there or a male, but for females, it tends to be a little more extreme because their heels will be up at two or three inches and their feet are only, you know, size seven. Females foot is about half the length of a size 13 or 14 male. You know, so the slope meaning the rise over run, you know, so if you put a two to three-inch heel on a foot, that's maybe, you know, 6 inches long, you know, they're walking around all day on a 30% grade. I'm not making that up. And then the pressure is actually on that first toe joint because it tends to be flat where the toe is, you know, so you're at this bend at the, we call it the metatarsophalangeal joint, but that's kind of where your toes meet the mid-foot and then the toe is actually squeezed in too, right?

So your foot's gonna be shaped like a shoe. Ultimately, over time, your Achilles tendon shortens, your calf muscles gastrocs soleus shorten, plantar fascia shorten. So all of these tissues start to shorten and then if you try to kind of transition out of that and get to a more flat shoe, you're probably gonna have some discomfort because all these tissues that are now shortened are trying to get back out to length. So it's a process. If you've been in super high heels, you know, for 10/20 years, you're not gonna be able to just chuck them away and start walking naturally in a week. But what that also does, it really changes your pattern of movement from one of our glute to a posterior chain dominant to quad dominant. So when our heels are up, and you watch how people run and move, they're mostly gonna use their quads. And when they land, if their foot has that deformed big toe, meaning that foot collapses in because the big toe is not in the game, what happens is that drives the knee in. We call it knee valgus. So it's valgus with an L. So when they land, if you see pictures of people landing, you know, their knee was caving in. So their leg is kinda shaped, kind of like an L with the point of the L kind of pointing toward the middle. And that movement will contribute to the ACL injuries.

So when you jump and land like that and you get this torsion force through the knee joint in a dysfunctional way, snap, you know, that ACL goes. Now a proper landing pattern and, you know, the high-end soccer teams, basketball teams, they'll be doing jump training really early in the season, you know, to kind of land like a cat. So land squat back, no knees caving in. So they're gonna practice and practice and practice this landing pattern. But what happens is, unless that's your ingrained pattern, when you're under fatigue, things tend to just go back to default. So the fourth period of a basketball game and you're under fatigue and you don't have a good movement pattern wired in your brain and you just take one bad landing that you shouldn't have done and boom, it happens and it's catastrophic and it ends careers.

And it could also change someone, not just their athletic career, but, you know, they don't have the vigorous life anymore. So if you had a catastrophic knee injury, now you got knee arthritis. You know, there goes, you know, jogging with your dog and that's too bad. But it all starts with the kid, just like nutrition, right? If a child is obese at age five, their odds of being an adult obese is like 80% to 90%. So you need to get on this early in life or else you're committing that poor child to a difficult battle, not an unwinnable one, but one that's much more difficult.

Katie: Yeah. And when you talk about heels, I think of, because I very rarely wear heels, but last year, I did a really big hike in the Alps and we were up an Alp and down an Alp and walking down was actually tougher than up. And the next day my toes were so sore, my big toes were so sore and my foot, because I'm not used to moving that way. And it made me think this grade that my feet are out walking down this hill, that's kind of the grade that some people are using every day if they're wearing heels. And it was really uncomfortable for a few days and because it was different for me, I really felt it.

Mark: Yeah. All it takes is gone on some country road and you see caution 6% grade, 10% grade and that's a big steep hill and you're walking on like twice that. But all I suggest to people, Katie, to do is do like a two-week test. Not while they're running because running is a little too high a force if you're transitioning, but walk for two weeks in a flatter shoe or a flat shoe and then go try to put those wheels back on and see kind of how your hips and your back feel. And usually, people are like, "Wow, I can't..." You know, all those shoes are like at the goodwill because they can't wear their shoes anymore.

So do your own experiment on that, you know, try to go like a two-week flat test. And ladies actually are pretty fortunate, so true flats for ladies are actually acceptable. People tend to go to either extreme. They'll wear flats or they'll wear heels. And I think that in the corporate world, the ladies who are on the shorter side tend to wear the heels culturally.

But I think there was a really good article in "The Washington Post." We have it posted up in my store. It was an editorial empowering women basically to say F you to the world that is giving them some kind of bias if they're not in these horrible shoes. It was just empowering women to say, "Okay, my foot health matters. I'm wearing flats and if that bothers you, go to hell." You know, I mean, in respectful terms. But you can't put your body through pain thinking you're trying to please someone else. And I think culturally, we've gotten over that. You know, 20 years ago, we didn't even have females in corporate boardrooms and now females can walk into corporate boardrooms in flat shoes. So I think it's the revolution. So yeah, it's okay. I think you have a whole tribe behind you saying it's okay. You don't have to wreck your body to please anyone.

Katie: Absolutely. That was my experience. Once I switched to more comfortable minimalist type shoes, I donated all my heels. I think I have one pair that's like, occasionally I'll wear it to a wedding or black tie event, but they're just not comfortable and it's not worth it anymore. And I don't wanna spend all of our time on barefoot shoes even though I think this is a super important topic because you also have expertise in another

area. And I love that you are a doctor who now has a focus on nutrition because this is a rare thing and it's super important. So I'd love to know, you mentioned that you were pre-diabetic awhile back. I'm really curious what you've learned about nutrition in your research and how you combine that with medicine.

Mark: Yeah, that's almost kind of humorous to think that, "Wow, here's a doctor who cares about nutrition." You know, you're like, wait, shouldn't that be, you know, 80% of illness now is chronic disease, you know, not acute trauma." And what we put in our mouths affects any chronic disease, not necessarily causative for all of it, but certainly, it affects it. So this should be foundational to everything any health professional is learning. So yeah, I mean, we all learned when I was in school, well, of course, you know, eating fat, made you fat. A calorie is a calorie. Calories in, calories out is how you gained or lost weight. We needed to eat a low-fat diet. The Food Pyramid and, you know, don't even eat an egg or bacon or anything because it has cholesterol and cholesterol is gonna clog your arteries. You know, that was called the diet-heart hypothesis and that wasn't really based on any science. That was a political meeting, you know, in the Senate and the McGovern Commission and the USDA trying to create the first dietary guidelines for America, which was based on this fear of heart disease.

So we had to do something, right? And that was kind of the reaction, like, let's just do something, even if it was wrong, but that's what we learned in medical school. So we were probably worse than knowing nothing. So what we learned and taught and just propagate out there to society was stuff, and if you look at the curve, you know, it's pretty clear. So when we started this way of thinking in 1980, that was the first time we ignored what our grandparents did and they didn't have much chronic disease and followed the government advice and we actually followed that advice. So since 1980, you know, Americans eat less fat, more carbohydrates, protein has been pretty neutral. But what's happened to that obesity curve in diabetes curves since 1980? Yeah. It's gone through the roof, right? Yeah. Yeah. It's tripled.

Katie: It's like a hockey rise.

Mark: Yeah. Yeah. My state is number one. So we have just two weeks ago, the new CDC data came out. My state has 38% obesity. That's overweight as well over 60% obesity. In 1980, that was less than 15%. So, whoa, that's like two generations. Diabetes is like 17%. Pre-diabetes is the same thing. It's over 50%. So wait a minute, you know, we're following this advice and things are going wrong, but that's what we thought and it took me, you know, getting ill to understand it and I think I came because of my foot experience. You know, so when I got this problem in my military physical, you know, my labs were all off the wagon. And I was waking up every morning at 2:00 in the morning because I needed more cereal. I was like eight times a day cereal with skim milk because I was what's called insulin resistance, high insulin levels and my body couldn't use any fat as fuel. So I couldn't make it more than four hours without adding more carbohydrates to my body.

So I was waking up not because I wanted to every morning at 2:00 in the morning because my body physiologically had to. But I didn't understand it. I was just thinking, well, maybe it's because I run and I just need the calories. But then I got this lab work back and I was fortunate just to... At that time, I was working on this project called the Efficient Running project for the Air Force. And so the charge for that project, Katie, was

to help people pass the fitness test. There were new standards and failure rates were going up, injury rates were going up, and I was looked on in the Air Force as kind of like the running guy, you know, and people thought it was a running problem because that's where they were failing the test.

But I looked at the data in that kind of subset of people failing and I noticed that if they had a high BMI, their odds of failing the test were like super high. So I needed to sort out the BMI issue, you know. So if we weren't addressing the BMI, didn't matter what kind of running training they were doing. They were probably still in difficulty. And I came across the first article that made me challenge what I thought to be true. You know, you just kind of ran. This was before even Google, I think, you know. But there were some search engines, I think Internet Explorer, so I'm like searching things and I came across this article by Gary Taubes. It was called "Maybe it's all been a Big Fat Lie." It was a "New York Times" magazine cover article from like 2002 which challenged the conventional wisdom. And he had followed that...

So I read that article, I'm like, "That's fascinating because it's actually what I witness every day in my medical practice. You know, no one that I'm seeing as a doctor is actually losing weight." You know, they're all gaining weight, you know, with this advice. And I picked up this book, "Good Calories, Bad Calories," which was like this 450-page tome with 1,200 references. This historical tome about nutritional science. And I read it like three times and I was like, "Wow, that just makes sense, right? It's what it is." And that was my last bowl of cereal. But then I spent about four months on the road traveling to Air Force bases and giving these seminars on how to pass the fitness test. And I was curious about the diet and what people were doing in the real world. So I go to these bases and there'd be 50 to 100 people. We would do these workshops, you know, teach them running mechanics, a little barefoot running, you know, slow down their training, all the principles that I talk about in the book. But I would ask this question has anyone in the audience lost 50 pounds and kept it off for a year. You know, just a couple would raise their hand, maybe one, maybe two. And I'd ask those folks, you know, "Well, what have you done?" Across the board, no matter where I was. "Well, I got rid of sugar. Well, I'm doing Atkins", or they'd say the word or, you know, got rid of bread or I'm doing Paleo. Paleo was hardly even a word then, but there was a small kind of cult of Paleo. But it was all kind of a similar thing. They all got rid of the sugar and, you know, that was my kind of Air Force validation of maybe this is true because they didn't have a single person through those four months and probably, I don't know, 50 to 100 military bases say, well, I'm doing Ornish, I'm doing the low-fat diet.

And then it came back to my medical hospital and we presented this stuff at a staff meeting that, "Okay, maybe we should just not serve all the diabetics all the sugar. Let's just see how it goes." And that met some resistance but they allowed me to do it. And, you know, we started in my hospital teaching people. "Well, you're in the hospital. You're in a controlled setting. Let's not feed you sugar and not give you all that insulin that you take every day and let's just see what happens, you know, what do you got to lose? Right?" And you'd see people just coming down on these insulin doses and they stayed off it, you know, they lose the weight. You know, and then books started to come out after that. You know, you had "New Atkins for a New You," Phinney and Volek, the "Scientists in the Field," you know, 800 papers between them, Eric Westman, and now like the world has exploded in this low-carb world.

And the science has always been there. But the conventional wisdom has always been the opposite. So now we're trying to move the science back into the medical training at my school to say, "Okay, this is a path that everyone should be offered. If you're obese or diabetic, you know, we just need to give people information and let them decide, you know, one option, which is probably the preferred option because all these people have what's called hyperinsulinemia. You know, their insulin levels are high because they're insulin resistant. And insulin is the miracle grow for fat. And the main driver of insulin is carbohydrates. So if you have a big belly, that's where insulin stores carbohydrates as fat. Let's just give you this option. How about three weeks to get rid of the sugar, just give it a go and we have to deal with their brain because it's a powerful chemical addiction. Robert Lustig has written that, you know, the dopamine effect of sugar. Sugar is highly addictive.

But give them that option or they could say, "No, that's not... You know, I love my bread too much." But at least they need to know and we owe it to them as healthcare professionals to at least say, "Look, this option exists. It's the preferred option if you have this problem, diabetes, obesity," that's where the data says they should start there and give it a go and we need to support them and not tell them that that egg is gonna cause a heart attack because that's not true. You know, the opposite is true. The diabetes is gonna drive that. But that's it, in a nutshell, and so, yes. Do some reading on that. You know, so low carbohydrate diets, if you have obesity and diabetes should be the first place to start and that's real food. You know, that's not buying, you know, Atkins bars, processed low-carb junk food. You know, there's a whole market for that now or, you know, eating pork rinds every day. That's not good.

You know, eat a good serving of vegetables at every meal, non-starchy. Don't be afraid of good quality meats, cheese, butter, right, the real stuff. Eggs on the table. You know, this stuff is how you roll and that's been my diet for six, seven years and had every test of everything to look for disease in my body and I don't have any. So, you know, for me, it's working because my genetics will drive me to. My father had a heart attack at 35. So my genes will drive me the wrong way if I live the way the standard American does now. But there's more than one road to Rome but that option should be the one front and center at least for my state where the majority have this problem, not the minority.

Katie: I think it's interesting to note also that when you were originally diagnosed with pre-diabetes, you were doing a lot of the things that the traditional advice would be they would keep you from having health problems. You were, I'm sure, getting plenty of exercise. You were eating low fat. You were doing the things that were commonly recommended. So based on the conventional wisdom, you should have been the picture of health, right?

Mark: Yeah. And there's a concept of fit but not healthy. So yeah, I was fit. I could run faster than I can now. You know, so I mean I'm about ready to turn 52, so, I mean, marathon time's slowed down. Just, you know, your strength gets a little less as you get older. Aerobic capacity drops. So I was like super fit then, but if you looked at my health markers, I was not. You know, I had high triglycerides, low HDL, hemoglobin A1C was above the ideal range and the prediabetic range. So those things are not... And you see that a lot with over-exercisers. Right?

You know, people that are exercising too much, you know, can drive themselves into all kinds of problems including cardiac problems. So we just need to separate the two. So my focus is to get healthy. And I think if you stay healthy through age, then you can do all your sport. If for some reason you lose your health, then you can't do the things you love to do. So my focus now is to stay healthy and lineup in races every now and then. And if I'm healthy, I can still race pretty well because I'm healthy. If I wasn't healthy, I wouldn't even get to the starting line.

Katie: For sure. And I think I go back to a lot, the idea that you can't out exercise a poor diet. You can't out supplement a poor diet. You also can't out exercise or out supplement poor sleep. I think those are two really underestimated and important factors.

Mark: Yeah, that's called like sleep doping. You know, if you look at athletic performance...but they're actually what you mentioned, there is actually a great article you could link. It's by a Timothy Noakes, Dr. Timothy Noakes and Stephen Phinney. It's called, "You can't outrun a Bad Diet." I think I've seen Mohatra contribute to that from the UK, but it talks about that whole thing and anything that Timothy Noakes has, Dr. Timothy Noakes from South Africa, he just wrote this amazing book called "The Law of Nutrition," and I think that is like the new Bible outside of Gary Taubes's 2008 "Good Calories, Bad Calories." So those are some good reads.

Katie: Yeah, I've read both of those and they're really good. And I think another point that you hit on that is so important to note is that it's especially that combination that like fats in and of themselves are not bad and there's protein and the vegetables, but there is that unique thing that happens when you are combining too many carbohydrates with all of these things, especially in a processed sense. And I'm sure, like I have, you've looked at the data and it's really unheard of in history to see this rapid of an increase in things like obesity and heart disease and cancer and just this meteoric rise that we're having across the board is completely unheard of throughout history. And granted we have many factors that our bodies are dealing with now that even our grandparents didn't have to deal with. But we have seen this drastic change in the dietary recommendations in the last couple of generations and now we're seeing the effects of that.

This podcast is brought to you by SteadyMD, and I have a story to tell you about them! I love this concierge medicine company because they have an amazing team of doctors and they match you with one who shares your values and your health ideals. This way, your doctor knows your full medical history and is available any time you need him or her for calls, video chat or text questions, which is what I usually use. With the new family plan, you can ask questions about your kids, and this is where the story comes in. Last year, I can only just now finally now talk about this because it was so traumatic, there was an outbreak of impetigo in our neighborhood, possibly from a water slide that all of the kids in the neighborhood played on. And if you don't know, Impetigo is a type of staph infection on the skin and it was bad. There were 30 kids with skin infections all at once and it was pitiful to witness and they kept transferring it back and forth as it's highly contagious and can live on surfaces for weeks or months. So all of us were doing an extreme amount of laundry and cleaning and stay on top of it. All of my neighbors were taking their kids to urgent care or local doctors, and they were getting many opinions of the best type of treatment ranged from multiple courses of oral antibiotics, to topical antibiotic creams to both. Since I hadn't found a good doctor here yet and was so grateful to have my SteadyMD doctor literally in my pocket. While everyone else was sitting in doctors offices for multiple hours

and multiple visits to see a doc, I was able to video chat mine, share pics of my kids and get his advice instantly. He already knew my preference is to avoid oral antibiotics whenever possible and he worked with me on a plan to tackle impetigo naturally and to only use topical treatments and save oral antibiotics as a last ditch effort, which we did not have to use. He was on call for the several weeks of the healing process to make sure there were no complications, he checked in with me every day and he gave me peace of mind during a stressful situation. I've used them so many other times for little things that require peace of mind and even for bigger "does this need stitches" type questions. I cannot recommend them highly enough. Check them out at steadyMD.com/wellnessmama.

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Katie: So I'm really grateful that you are on the front lines in a state that's really suffering from this problem trying to make changes. And if my research for this episode is correct, you actually were instrumental in getting a hospital's food policies changed. Is that right?

Mark: Yeah. So I think everyone can agree on, Katie, say you have the camp that thinks that all meat is gonna kill you. And then you have the carnivore camp who are... So you have all these people kind of fighting each other. But the biggest elephant in the room is the sugar drinks would be the simplest one to remove and then the processed junk food carbohydrates. And I think whether you're a vegetarian or a carnivore, everyone would agree that that's where we meet in the middle that we need to go after. So we got rid of all the sugar drinks in my hospital for patients in the cafeteria, you know, in all the vending machines. So there are no sugar drinks in my hospital and I'm proud of that. I mean, that should be duh, right? That should be self-evident. I mean, we got rid of tobacco 15 years ago in hospitals, you know, 30 years after we knew that it was harmful, we finally got it out of hospitals.

So if we're waiting for the healthcare industry to fix all this, you know, for the healthcare industry and I work in it, it is what it is. You know, a lifetime of treatment is better than a cure. So we need to kind of take the bull by its horn, so to speak. But we need to go out there and just make change. And it's got to start somewhere, you know, so we're working through schools now to try to get rid of... I mean they all consider chocolate milk health food in schools now, which is really sad. You know, there's as much sugar in chocolate milk as a soda, juice. So juice is not health food, you know, to these poor kids with obesity. They start drinking juice, they may as well have the soda. It's the same thing.

So we're trying to get people to understand where all this sugar is. And it's about the why too. It's not like we went in there and we banned stuff and, you know, cram this down people's throats. Like, this is some new policy. So we involved all layers of the hospital including, you know, the kitchen staff, administrators, nursing, "Okay, what can we do together and how are we gonna promote this message?" And it's about the why, like, why are we doing this? We know this is a problem and if we can't, as a healthcare institution, at least take a small step in trying to set an example, how can we expect the schools to get rid of sugar drinks if the hospital isn't willing to do it. You know, if 80% of the hospital admissions now, which is true, are due to metabolic disease and if sugar's a big driver of metabolic disease and we're feeding those people that stuff while they're in the hospital. I mean, it really is. It's insane. It's complete insanity, but it happens all the time. And that kind of woke my eyes up.

You know, I had a patient, you know, that, it's like four years ago, you know, we're talking about all this stuff. And then I come back a little later in the day and there's a soda on the tray and the patient's like, "Well, if this stuff is really bad, why in the hell are you feeding it to me in the hospital? You know, if that's why I'm here." And it's like, "Damn, you're right." Because I mean, yeah, at that point it was hard to block it, right? They would just hit the button, ask the nurse for a soda and it would show up in two minutes, you know, because our goal in hospitals is customer satisfaction. I mean, that really is how hospitals are great and that can make everyone very happy by baking them all chocolate chip cookies and bringing them soda. But that has nothing to do with them getting healthier again. So our job isn't to make everyone uber-happy. Our job is to give them some knowledge so they can get healthy again and they can choose to take that or leave it, but we have to offer it to them.

Katie: Yeah. That's amazing to me that understanding what we know about the microbiome and the insulin response and the way the body responds to certain foods that so many places we are still feeding people post-surgery or in chemotherapy or who just had a heart attack, we're still feeding them soda and processed foods for every meal.

Mark: Yeah. And if it's low fat, right, then it's good. The diabetics are at huge risk of heart attack. You know, so diabetes is heart disease. It's the same thing at a cellular level. And if they go into the hospital and they're given a low-fat diet for their heart disease, which includes tons of bread and sugar and we think we're giving them a heart-healthy diet, no kidding, we're wrong. We're absolutely wrong. We're doing the wrong thing for these patients. We have to flip that food pyramid on its head for that group, you know, that has the obesity and the diabetes different than the smokers. You know, so we know smoking is a huge driver of heart disease. So we all know to get rid of the smoke but now it's the diabetes is the main driver of the heart disease because everyone is aware and policies are in place.

You know, so my 13-year-old can't go into 7-Eleven and buy cigarettes. I mean, when I was in 5th grade, I could. You know, so we have policies in place and they cost like \$8 bucks a pack now. So the affordability, accessibility, and acceptability of tobacco, you know, so you can't smoke on hospital grounds anymore. In many public places, you can't smoke. But sugar has all three, you know, right on the money, right? It's affordable, the cheapest thing you can buy is sugar stuff. It's acceptable, every birthday party, every school lunch, you know, hospital menus and it's accessible everywhere, right? You get it anywhere you want, is sugar.

So unless we go at it from a policy level and affect those things, you know, it's too affordable, accessible and acceptable, you know, we have to kind of work from that level and turn it around. But that's a tougher battle because then you're looking at... You know, you're invading people's rights. They'll say, "Well, no, you can't go to someone and say they can't have this even if it's killing them because it's America." But we need to have big warning labels. I think San Francisco actually put some warning labels on the coke cans. You know, similar to tobacco labels and that's probably what we need to do, skull and crossbones on that stuff and, you know, at least they see it and maybe not let kids go buy it in vending machines.

Katie: Yeah. I think that's an important distinction to know is like you mentioned earlier, Dr. Lustig's work is sugar is by classification and what it does to the brain, it is an addictive substance and it is classified by a drug as a lot of researchers are, there's been all these reports of how it is more addictive than certain other substances that are considered very dangerous. And also importantly to note, there is no biological need for refined sugar ever whatsoever. The body has no need for it that we can't get from vegetables or from fruit for people who eat fruit. There's much better sources of this. There's truly actually no biological reason to consume sugar and like you said, there's now a lot of data pointing the opposite direction that we should be avoiding it yet it is so acceptable. And not just acceptable, it's so pushed that even as a parent with young kids now, if you don't feed your kids sugar all the time, people think that's weird.

And there's a lot of social pressure to feed our kids sugar and it's so linked... I worry that it's so linked to positive life experiences that we're making that association so young for children that, like you said, every birthday party is an opportunity for sugar. Every good grade is an opportunity for sugar. Every time they go to the bank with their parents, they get sugar. It's just reinforced constantly on any kind of community or bonding experience and I really worry long term what kind of associations we're gonna see with this and the drastic rates we already are seeing of so many diseases. So I'm glad that there are people like you out there educating about this. Unfortunately, I don't see the problem getting better unless we do start taking some measures to bring awareness and like we have what tobacco raise awareness of how harmful it is to the body.

Mark: Yeah. Robert is an amazing.... He helped me with the first grant we did in medical school teaching medical students about nutrition. We based it on a Dr. Robert Lustig's first book, which was called "Fat Chance." So he was the disruptive voice out there saying that, you know, sugar is a toxin, you know, and the dose makes the toxin. So he gave a talk, "Sugar, the Bitter Truth." I think it's got like 8 million YouTube videos, but he wrote a book called "Fat Chance," which really explain the hormonal drivers of obesity that this wasn't a calorie in calorie out. And his latest book, what you mentioned there about the mind. So if any of you all are readers that are listening to audiobook, get it, it's called "Hijacking of the American Mind" by Robert Lustig. And that explains the dopamine effect of the sugar, you know, as compared to... So that's happiness is dopamine.

And then there's this other neurochemical called serotonin, which is contentment. And so we always tell people they got to get rid of the dopamine type of behaviors, you know, alcohol, tobacco, in my state, opiates, you know, anything that you could attach a -holic to is dopamine. It's immediate reward - happy meals. Reward, we've equilibrated to mean happiness in our society. But the other type of happiness is what you would get on a walk with your dog. And your dog has it and you have it right? It's content, which means I'm

good, right? I'm good. Like, if you're walking on the beach with your kids, right, you're good. You know, if you hear that, I'm good, you're content.

So you have to find those things in your life that give you contentment. And unfortunately, now, so many people just don't have that in their lives. You know, they're economically challenged. They, you know, don't have family support. They don't have anything that they can grab onto that gives them that type of happiness, contentment. So we need to try to figure out how to let people have purpose in their lives. And then maybe they can work on the sugar.

Katie: I love that point. I've said this for a while now that I think one of the biggest problems that's not talked about enough in today's world is the movement away from authentic actual community and support into this more fragmented social media world where we're all at odds so often, but also we're just detached from real-life interaction with relationships that improve us or that help support us. And we know biologically we have such a tremendous need for that. Statistically, it's as important as quitting smoking. It's more important than exercise. We need other humans and we need good interaction and we've largely moved away from that. So I love that you brought it back to that and I think that's a perfect note to end on as we start to wrap up.

As a last parting question, I'd love to hear. We've already mentioned so many amazing books and those will be linked in the show notes, but I always love to ask if there's a book or books that have really impacted your life. They don't have to be related to the topics we've talked about today, but I always am looking for new book recommendations.

Mark: Perhaps you know what books, I've had so many. I think if you really wanna understand, you know, some of the nutrition, read Nina Teicholz, is called "Big Fat Surprise." It's a wonderful book. I would read that and understand it because that turns everything on its head. A book I read pretty recent that is just such an amazing story of human will was the story of the 1936 Olympic team rowers from Seattle called "Boys in the Boat." So that's another just fun read. I like reading things. I'm working on a Ben Franklin's autobiography, his biography by Walter Isaacson. Now that's a long read, you know, because there's so many powerful life messages in that one. So maybe pick that one up if you got a few weeks to troll through.

I'm an Air Force guy, so I think everyone should read Tom Wolfe's "The Right Stuff." That got me excited about, you know, flight medicine and Air Force, just that whole culture. And he just passed away, you know, a few months ago. He was probably one of the most amazing, just descriptive writers. So "The Right Stuff," "Boys in the Boat," powerful read. Nutrition, you mentioned Taubes. But Nina Teicholz, I'm a good friend and we're both, you know, on the warpath now trying to change the dietary guidelines for America for 2020 just so we can differentiate these people that have insulin resistance because we've been following the dietary guidelines since 1980 and it's only lead to more disease. So we have to relook at that, you know. So, if two-thirds of the kids are failing school now, it's not about the kid. If 1 kid out of 30 in your school class is failing, it's probably about the kid. But if two-thirds are failing, it's not about the kid, right? It's about the environment. There's something we're doing that just is not right.

So we have to open all the science when we look at these dietary guidelines which get put into schools because that's why these kids can have chocolate milk. You know, it's not the schools are trying to do what they can with limited resources, but they're beholden to these guidelines, military rations. You know, now only about 25% of high school kids can even enlist in the military. You know, that's really sad because that's how, you know, kids of need get out, right? I was 29 years military. You know, such opportunity lost if these kids are obese, you know, and they can't enlist in the military.

So those are some policy things that people should learn about. Get involved in your community. Read my book because I just... Yeah, put that on the shortlist. It took me five years to write the damn thing, but I try to summarize a lot of this stuff, you know, in 300 pages, you know. So it took five years. It's like I'm trying to drill down nutrition into two chapters and then here's some references, if this is interesting to you. Because so many good things have been written, but how can I drill down the important things, you know, about play, children, nature, power of women? So I have a whole chapter in my book on the power of women in sport and running, you know, because women are really leading the change and getting people out in the running movement now. Over half of participants in running events now are ladies. So good on you.

Katie: I love that and I definitely will read your book will be linked in the show notes or people can find it, I'm sure on Amazon or any bookstore. I fully support your work and her work in getting the dietary guidelines changed. I know there have been little tiny improvements the last couple of times they updated it but we definitely need to see some much bigger broad changes and I hope that you guys are successful and if you are, we'd love to do a follow-up interview about that because like I said, I think it's such a drastic investment.

Mark: And Nina would be a great guest, she would love to come on. I can introduce you to Nina and she is a mother also of two children. So Nina Teicholz would be a great guest for you if you've not had her on before.

Katie: That would be awesome.

Mark: She's the expert. You know, I'm part of the tribe, kind of boots on the ground teaching this stuff to doctors, but she did 10 years of the hard research to make it happen.

Katie: Awesome. I love that. I appreciate her work and I appreciate your work and your time in being here today. I love that you are on the frontlines as a doctor working with patients and trying to make these changes and hopefully a lot of people listening are implementing those changes as well in their own lives and that together we'll see this pendulum starting to swing the other direction. But thank you for your time and for your work.

Mark: No, thank you, Katie. It's been a privilege and thank you for introducing me to your audience.

Katie: Absolutely. And thank you and thanks to all of you for listening and for sharing your valuable asset of time with us today. And I hope that you will join me again on the next episode of the Wellness Mama podcast.

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