DANNY LENNON: Kurtis, welcome to the podcast my man.

KURTIS FRANK: Glad to be here.

DANNY LENNON: So we've got a few interesting topics that I'm very curious to pick your brain on, because definitely the stuff that I've seen of yours previously, I like the way you think and how you approach things and how you have insight into some very interesting topics, particularly as they relate to supplementations we may get on to, but just generally how people should think with a scientific mind. But before I get to any specific questions, maybe just give people a brief background to some of the things they should know about you, what you're currently doing, your academic background, stuff like that.

KURTIS FRANK: Okay. So my academic background is not as good as one would think. I went to University of Guelph a while ago just for applied human dietetics. I can't legally call myself a dietitian at least, I never went to any training beyond university but I do have a background in that. But after reading dietetic studies, I have a sort of a revelation where I didn't like how they were so uncontrolled and how there's always that hanging cloud of guilt where you could actually blame the participants for the study going wrong, and because of that, I tried to take more pharmaceutical groups

to things. I just like to other studies, were more controlled, but at the same time, I couldn't really dabble in pharmacy because I'm not a medical doctor, and I really didn't want get into anything illegal either. So I went to dietary supplements instead.

And because I did a lot of form work and worked with the public on dietary supplements, I was later picked up and me with, at the time partner, Sol Orwell, founded Examine.com. I was pretty much a research hermit there for seven years doing most of the bulk work and just learning about any dietary supplement that people talked about and given the information as free as possible on an ad free website. Nationally Examine does sell some products, but doesn't get in the way of giving the information to people who want to learn.

Since then, I needed to take a break from just being a research hermit. So I've since gone over to Legion Supplements where I'm the research director and formulator of many of the supplements, and I just write some articles, do some podcasts and still further my knowledge on supplements and anything really pertaining to the whole experience of putting a pill in your mouth.

DANNY LENNON: Awesome. There's plenty of context there and should probably explain for most people where a lot of our conversation is going to go and why you're particularly qualified to talk about some of the topics we will get into.

The first thing that I did want to bring up is something that I know you've talked about before, and I think is a very interesting topic to go and dig into because when we talk about the placebo effect, it's something that pretty much everyone listening will have heard of. But I think there's varying degrees of how people understand it. There is some typical misconceptions and really maybe some little known things about the placebo effect and how it can be applied. So just from off the bat, what exactly is it when we're talking about the placebo effect? What's the most accurate way for people to think of it?

KURTIS FRANK: There is two ways to think about it. One is the scientific way and one is the more social counseling way? The scientific way is just, think of it as the necessary control, like a beneficial effect produced by something that doesn't have a drug effect, but it's still an effect. If you put something in your mouth, that something will do things because of the molecule it is. And then they're also just weird stuff that happens. And we need to have placebo controls and studies to control for all that weird stuff that we don't know what it's going to happen.

The more counseling and personally speaking, the more intriguing definition that I like is the study of the psychosocial context that surrounds the patient undergoing the therapy because basically you can titrate and control the placebo effect. The field of homeopathy a lot, which anyone listening probably has a thousand reasons to mock homeopathy and rightfully so. It's stupid, but homeopathy could be interesting to research simply because it is an entire demographic basically saying how can we maximize and control the placebo effect for the people taking the useless compounds and what we learned at homeopathy to add, the placebo effect or the drug effect can be seen as complementary forces.

Obviously fish oil will reduce triglycerides but then you can also think could triglycerides be reduced by the placebo effect, and if so, how do I give fish oil to somebody? Could I make the fish oil better by tapping into both the drug effect and the placebo effect by changing around how I counsel and interact with the patient in question? I do have to clarify that. I do not believe triglycerides are a field that have a high placebo response rate, but things like climacteric symptoms of postmenopausal women are depression, joint pain and any sort of sensation of pain actually. These are fields with high placebo response rates and thus the counseling and how you interact with somebody does influence the potency of the intervention.

DANNY LENNON: Yeah, so that starts severing up a really interesting set of questions, and I suppose one that comes directly from what you just indicated is rather than people starting to think of, we have these set things that work physiologically and have

some affect, are you taking this drug or taking this supplement? And then we've these other things that if they have worked, they're just a placebo so let's get rid of and ignore that.

Whereas this kind of overlap that you just talked about of really to maybe harness something more powerful, we can start thinking about how can we take stuff that is going to have some real physiological effect, but in a way we maybe prescribed that or discuss that with someone, we can maybe get a synergistic effect, I suppose. Would that be kind of accurate?

KURTIS FRANK: I would say additive, but yes, it would be accurate.

DANNY LENNON: So if that's the case then that we have a potential to use the placebo effect with people for some end benefit, then it kind of sense we're using it there must be various different things that can influence that effect. Seeing as you said, we can titrate this previously. So what things do we know can influence the placebo effect? Are the things that we know, well, at least make it more likely to have some sort of benefit at the end?

KURTIS FRANK: It's going to be hard for me. Half of these things I can't really say are scientifically based or at the very least I've read about them in studies and do not fully understand why they are happening. But there's some simple ones about what are you taking precisely like something that is in a red capsule is historically seen as more stimulatory, likely to cause excitatory effects than something in a cooler color like a blue capsule. When you want to influence perceived potency, this is usually inverse pain, which has a high placebo response rate, bigger capsules seem to outperform smaller capsules, like as people assume that bigger is better or something.

But again, a lot of these things, they are not, how do I say, static? They're not solid in their solely an interaction between the person's expectations and what they believe, what their eyes, ears and faith will lead them to. The only reason red coloration is more stimulatory is because people associate red with excitation. The only reason bigger capsules will have higher potency is because people associate

bigger with better. But if people do not have that association in their own mind, then it is very plausible that what I just said will fall right on this face.

But beyond that, it's just if you can get people to expect a certain result, then on certain rounds where there's a higher placebo response rate, it is possible that they will experience larger benefits from it, but it ultimately relies on the person and their own expectations and what they think will happen going into something. I remember the first fat burner I took was quite literally just caffeine, some useless stuff, but I thought it was amazing because I had my hopes up.

DANNY LENNON: I think a lot of people will probably resonate with that and have a memory themselves where they felt that way. And I think it's certainly something that maybe intuitively people will be aware of that if we have a placebo and someone expects it to work, then that's how it's having its effect. However, I remember, I think somewhere, I remember reading an article of yours where you talked about open label placebo trials and where we have certain cases where even when someone is being told that they're taking a placebo, it still worked to reduce their pains symptoms so in case like that, what the hell is going on there?

KURTIS FRANK: I wish I knew. I honestly figured that if you told someone straight to their face that this is a placebo, it will not work, that it would not work, but for some reason it is. It doesn't seem to be as potent as deceiving somebody, but the potency is still there. I guess maybe my only guess and this guess is not based on anything I've read, just from my interpretation of the research is that because people know that placebos could work, maybe they still have some expectations. And the more we talked about this topic, the more we began to problematic. I don't want to say that word. Dubious fields of questionable scientific integrity because placebo could definitely be seen as the power of the mind, which is probably something I never want to read in a scientific study.

It's just such a weird phrase, but that is exactly what it is. It's one's own expectations. And it seems that those expectations can, to a small degree at least, transcend logic on some

realms but not all. I do want to make that clear though because pain, menopausal symptoms, a lot of stuff that one's own perception influences are the things more affected by placebo, but there's no evidence say that you can take a sugar pill. So it tells you there's a sugar pill that you can think your way into getting more jacked. Changes the body tissue are not something that is affected by placebo rates, at least not highly, that I believe.

DANNY LENNON: Yeah and particularly the more and more we see with emerging pain science and just the role of the neurological basis of that, that makes more sense of how that could be affected. Whereas as you say, something like actually building new muscle tissues are entirely different animal.

When we're talking about potentially ways to use this, something that I've talked with a couple of people before, most notably Greg Nuckols, I remember having a conversation with Isabel of essentially circumstances where coaches can placebo their clients. If there is a case of doing that and there's a potential for coaches to use it for good, do you think that's something that should be within a coach's toolbox that say where they can set up conditions that might make it more likely for that client to be placeboed and what kind of line should be probably tow there between flat out lying to a client versus just allowing them to gain benefit from something they may be already believe.

KURTIS FRANK: I would draw a hard line at deception, this is just a moral standpoint. I cannot fathom a situation where you would want to intentionally deceive a client. Even when it comes to psychological research, there has to be a phase or after the study, you say that was willful deception, we apologize in retrospect, necessary for progression of science. But when it comes to a one on one thing, if you deceive your client as soon as they realize that, that's a sting and that sting's not going to go away. So I don't think there should ever be any deception when it comes to a client.

At the same time, however, I'm looking to more because again, one of the definitions of placebo is how it's the context is psychosocial situation surrounding the treatment. That

stuff could be modified. Things that influence, I guess you could say, the state of mind of somebody like meditation or expectations, those are more than reasonable things that I feel can be manipulated. Even telling your client like this is expected to work, let's say five abstract units. But it's possible if you just believe that it works 10 abstract units, it might so this will be the time to get your hopes up and just tell them to their face. If you just stupidly believe in this more than you should, it could potentially help you more than it should.

DANNY LENNON: Maybe a follow on from that. Maybe some people are thinking, particularly with the message we try and promote of people being evidence-based practitioners and trying to provide recommendations and guidelines for clients that are grounded in evidence and are backed by I suppose, scientific consensus. With that said, if a client is of a belief of something that maybe is not an evidence-based thing that they're doing and they believe they're driving benefit and therefore that's driving them to good results.

Is there any case where you think it's fair for maybe someone to maybe turn a blind eye to actually correcting them or something, let's say for example, they believe that using a foam roller is getting knots out of their muscle or they believe that their energy levels are up because they've embarked on, say, a glutton free diet or something, the nature where we may call some into question, but for this individual person, they're feeling good or they're reporting they're feeling good, where is the point where maybe someone might want to interject or just let things play their course?

KURTIS FRANK: I would generally take the approach of you start off by saying, the general scientific consensus at this point in time is x and that could be directly against what they're doing, but then followed up by saying, ultimately, however, you do you whatever works for you, works for you. And if you want to continue doing this and you're willing to keep on putting down the money and time required to do this, then you are in control of your own actions.

By doing this, it puts the locus of control back on the client. It is their decision, whether or not they want to continue doing something and you put forward your expert opinion that I do not believe this is doing anything, but I will leave the final decision up to you. The only time I feel interventions should be used is when there is demonstrable harm.

For example, if I knew someone who swore by taking 45 milligrams of zinc laws and just every single day to stave off the flu, I would probably step in to go, no, you're surpassed that. That is too high of a dose. You cannot continue doing this, but if they were spending 10 bucks of month on homeopathy, and they really, really like that, and they swear that spending 10 bucks a month on homeopathy has made them happier and healthier then I'd simply say, homeopathy should not work, it's all placebo. However, as long as you understand that what you're doing goes against a scientific consensus, if you want to continue and are willing to do so, I'm not going to say anything, your life is your own.

DANNY LENNON: One thing that I'm sure people are thinking of asking about as a related concept and I suppose the darker cause of the placebo effect that they would have heard about, and that's the nocebo and how that can potentially play a role. So what are some of the important fundamental things people should know about the nocebo effect or understand what it is exactly?

KURTIS FRANK: I think the most concerning thing is that if you recommend a supplement or I could probably extend it to diet or habits as well, if you recommend something to a client and they have anxiety about undergoing that thing, let's say they don't want to do intermittent fasting, or they don't take creatine because they heard some stupid ideas that it harms your kidneys or whatever. That anxiety, those beliefs towards the supplement could then manifest in a nocebo effect, further solidifying their negative beliefs about something.

If someone shows hesitation towards something, there are going to be a few people who do well with the whole forcible approach but as a general rule of thumb, that's not the

direction you want to go. Because again, when someone doesn't want to do something, you tell them to do it and then they feel that they got hurt from it, whether they did or not, it's just going to reinforce their beliefs and their negative beliefs. You don't want to reinforce those ones.

DANNY LENNON: I'm keen to do switch that and start looking at some supplementation specifically. So I can call on some of your expertise in this area. And there's a few areas related to supplements that haven't been directly addressed on this show in all that much detail before. And so very keen to hear some of your thoughts on that.

One that I believe that you've addressed previously and that I think is something that really should be understood by a lot of people, is when it comes to supplementation for the purposes of reducing inflammation, or just really the general concept of inflammation has gone so crazy when you look at various different online sources that aren't the best.

And I mean it's very common for people to be saying, I take supplement x because it's great for reducing inflammation and those type of generic maybe in some cases, even meaningless statements can happen quite often. And so many people are maybe, I don't know if it is their own word, but bought into the idea that anything that claims to reduce inflammation must be a good product. It must be useful if it reduces inflammation because reducing inflammation is healthy. So what is a maybe better way for people to think about inflammation? And then therefore, this kind of sub category of supplements of anti-inflammatory supplements or supplements that will help you reduce your inflammation.

KURTIS FRANK: The general approach that I take on this is to just understand that inflammation as a means towards an end, supplements towards the ends do not supplement towards the means. If you come across somebody, they may say that they're taking anti-inflammatory supplement and then you follow up with, why are you taking anti-inflammatory supplement? If they say I'm doing it just to be healthy then are they healthy? What do they measure their health by? Has the supplement helped them on that? Other times you may go, oh, I'm taking

for my joint pain. Well, has you join pain been reduced. I'm taking it to improve cognition, has your cognition improved?

The word inflammation should never be the end all, be all of whether or not you take a supplement. And scientifically, if somebody says that, let's say circumin reduce inflammation that then reduces joint pain, you should be focusing on that last bit. A leads to B, which then leads to C, so connect A to C. Circumin reduces joint pain because joint pain is what people care about. My glycol size could be really sticky right now, I don't really know and I don't really care if that makes me more susceptible to sickness, then I'll start caring about getting sick. That's the thing I should supplement towards.

DANNY LENNON: So with that said, is there any particular, when it comes to the various supplements that are out there and people are trying to dig through this so far who said, okay, first actually have a reason for supplementing for something. And that point should be just to supplement for reducing inflammation, you're trying to maybe take one of these supplements that could reduce inflammation for a specific reason that you are in the end targeting.

Now, with that said, just because of how many supplements these days and different compounds are labeled as anti-inflammatory or able to reduce inflammation, are there some that people should be particularly aware of that are actually worth considering when they do want to go and use an anti-inflammatory supplement versus maybe some common ones that are really of no potential benefit.

KURTIS FRANK: There are a few. The first one I should mention is Circumin. Circumin is basically just herbal ibuprofen. It could maybe be a bit better when it comes to stomach issues. It could cause less of them, but what it comes to potency, it's essentially comparable and you will eventually have clients who you recommend ibuprofen and because it's a pharmaceutical, ooh, that's a scary word. I don't want to take it. So curcumin ends up doing the exact same thing, but to reference back our talks on the placebo effect, sometimes it puts people in a better state of mind because the word

natural has just been marketed so much. They have more faith in that. They can ultimately get more benefits.

Of course, if they are completely fun taking ibuprofen, then just recommend that. Beyond that I am particularly a fan of spirulina. It's one of the few supplements that has just clicked with me both from a research perspective and a personal one. And one of the reasons I like it is because not only could have potent anti-inflammatory effects, but it does not seem at this point of time to suppress the immune system. Naturally, when something is a potent anti-inflammatory, it should promote sickness. Spirulina seems be the opposite.

So at the same time seems to be best of two worlds although I do have to clarify that the body of evidence, while it has expanded in a positive human evidence with good results, is not as large as one might think when compared to something like fish oil or circumin or definitely not creatine. Creatine is way up there with how many studies it has.

DANNY LENNON: You did mention there that one of the typical reasons why maybe someone might be looking for an anti-inflammatory supplement is typically joint pain. And this is quite common to see that someone is looking for a supplement to either help with joint pain or even from a more long term view of just general joint health or if we have an athlete that tends to be concerned that they have a high training workload and they're worried that it's going to beat down their joints over time.

And there's a few typical supplements that most people will talk about or have heard recommended. For example, something like glucose, I mean is often mentioned when people bring up joint health and joint pain supplementation, where does the evidence currently lie on the various different types of supplements in this field? And where would you point people towards if that is something that they are potentially trying to target?

KURTIS FRANK: So there's a lot of things I could talk about. Okay. So I want to start with four to five, because that was the joint health supplement that I created. It is essentially circumin,

boswellia serrata, type 2 hydrolyzed collagen and grape seed extract. And those four, I feel putting them together will help the most amount of people. Because again, circumin is the ibuprofen thing, boswellia acts on a different set of enzymes and I'm not sure if I can give a pharmaceutical comparison, but it does seem be beneficial for Osteoarthritis, and there is perhaps an individual pain reducing effect that can affect athletes beyond placebo associated with boswellia. Type 2 hydrolyzed collagen is the only supplement I know of that evidence against your rheumatism.

Everything else is tested in Osteoarthritis or more sparsely in athletes. So finding some of the worst for rheumatism is quite nice and grape seed extract doesn't really do anything for the joints, but for people who are sitting a long time or just have an office job and they have a bunch of a edema in their legs, maybe some varicose veins, some minor blood flow enhancer would work well in that context because some people do sit down for five hours, then when they get up their knees creek for the next 10 minutes, and then it goes away once they start walking. That's the idea that grape seed extract targets.

Beyond that for joint health, I'm torn on glucosamine because it is by far the most researched, joint health supplement. And again, joint health and joint pain in particular is one of the things that has a high placebo response rate. But there are issues with glucosamine supplementation that I'm just uncertain of because to start with glucosamine paired with chondroitin or glucosamine sulphate by itself both have evidence at the meta analysis level of providing benefit to joint pain over placebo.

By glucosamine hydrochloride by itself outright fails. And when you think about that, glucosamine sulphate works, glucosamine paired with chondoitin sulphate works, but glucosamine hydrochloride fails. My initial thought is that perhaps it's the sulphate that's doing this because sulphur especially with dietary protein does play a major role in just maintaining antioxine defenses and potentially supporting joints.

And we see other supplements catered to joint health like MSM, Methylsulfonylmethane is a sulphur donor. It could just potentially be sulphur itself. And while less research, it seems that the molecule itself might also be of benefit. But again, when it comes to glucosamine and chondoitin, they are the number one supplement for joint pain and joint pain is probably one of the... it's either the top or the second top most popular genre of supplements. So there's a lot of industry bias in the field.

So ultimately, I don't really know whether or not I can recommend glucosamine, if it just happens to be laying around, I guess go for it because it does not have demonstrable negative effects or side effects associated with it. But I don't know, it could potentially be either just sulphate working, or it could just be an industry motivated thing. It's very hard to tell at this point in time despite the multitude of evidence.

DANNY LENNON: One other area that I tend to get quite a lot of questions about and I've seen various different people talk about different supplements is for help with people to improve either sleep quality and or sleep onset for people with issues. And again, this is another field where there's no shortage of products out there and different compounds that people discuss. Some that seem to not be doing what people actually believe they are. So with supplements in this area, what do you think are the kind of primary things you would tell people to be aware of in terms of the common supplements they probably see and then what kind of particular compounds you would recommend for sleep?

KURTIS FRANK: Okay, so to start with, I have to mention that melatonin is the golden god of sleep supplements, but it is not a panacea. Melatonin reduces sleep latency or the time it takes to fall asleep. That's all it does, but it does it damn well. If you're the type of person who when you put your head to the pillow, you fall asleep in five minutes, it will be useless for you. If you're the type of person who falls asleep and you're just staring at the ceiling for half an hour, melatonin could be a benefit to you. It will not inherently improves sleep quality, but if you get an extra 30 minutes of sleep because you're not

just lying there awake, then you get an indirect increase the sleep quality because of that, just more sleep in general.

For dosages, I would personally either do a... for people who have trouble, they fall sleep easy, but they wake up frequently during the night, there are some time release 3mg capsules that could be useful. For those who do not have a time release capsule, I would recommend starting at half of a milligram, so 500 micrograms, and then if that works, it works. If it doesn't work, go up to a milligram, basically start low and increase the dose as much as you can until you get grogginess, or if it starts working less. There is going to be an optimal dose between 2mg and 500 micrograms and you need to test that out yourself.

As for the other sleep supplements, the other ones they pale in comparison to melatonin. Melatonin is just way up there on the amount of evidence and reliability that that has. But I would personally be on the lookout lemon balm, which it doesn't have any direct evidence for improving sleep, but it is a mild sedative. Not a benzodiazepine sedative, mind you, so I need to have that warning out of the way, it's not a benzo, but for people who have increase of thoughts before going to bed, that could be useful.

Glycine and valerian both technically, they have evidence for improving sleep, but it's really, really weird. If someone goes to sleep, in a machine we measure their brain waves, there is no actual data on sleep quality being increased. But when they wake up and you said, how did you sleep? They say they sleep better, which is weird because the machine is not picking up on it, but glycine and valerian make people wake up and go well, yeah, that was pretty nice sleep and no one knows why. Just nobody knows why those two things work like that. But at the same time they both might not work with daily supplementation, so it is more like just have it on hand once or twice a week if you feel like you need to wake up with a smile on your face in the morning, take them before bed.

And yeah, it's just confusing as to why nobody knows why they work, like they shouldn't. And yet self-reports say they do it and it's two supplements from multiple different

researchers. It's not just one research group going off making stuff up. It's kind of cool though.

DANNY LENNON: It is very cool and I think it's just one of those things I'm guessing that any time you try and look at something within the brain, you kind of now and again, come across something, it's like, wow, I just don't have a clue what is happening here. So it's very interesting to see that that we're not seeing this detected, but on the sleep supplement stuff very much, I appreciate that occurs. Kurtis, we're coming close to time here. So before I get the final question, I do want to let you tell people where they can find more of you on the internet. Where can they track you down either on social media or any particular blog post you want to send them to, or any particular websites, where is the best place that you want a divert their attention to?

KURTIS FRANK: I'm not a really too active on social media these days. So if I were to direct anyone, first if any of your listeners have not heard about examine.com, go there, it's just free information. If you want to send the money, go forward, you don't need to. But for information, always great.

More contemporarily, I work a Legion Athletics, which a does have a blog. I do write there about once to twice a week so you can just see the articles I write about there, mostly supplementation stuff, but every now and then just a range of articles that pique my interest. There is an article on the placebo effects so if you want a recap on that, you can go to Legion Athletics blog to find out, and then come a few weeks, there should be articles on both music and meditation, which could be interesting.

DANNY LENNON: Very cool. And for everyone, this thing, I will link to all of that in the show notes to this episode, and I very much recommend that you go and check all of that stuff out that Kurtis has just mentioned. With that, that brings us to the final question we always round out the show on, Kurtis, and this can be to do with something completely outside of today's topic, and it's simply if you could advise people to do one thing each day that would impart some beneficial impact on any area of their life, what would that one thing be?

KURTIS FRANK: Wow, that's a big one. That is most definitely a big one. Well, can I give two related topics? Two things that have helped me out a lot. When you wake up in the morning do something, do something fast. I don't care what it is. It's just I've seen and talked to a lot of people who when they wake up, they slug through the first bit of the day and they eventually start waking up just before lunch. And it's like no, you just wasted so much. Just like you wake up in the morning, just do something that could be defined as a slap in the face, maybe you actually slap yourself in the face.

Maybe you take a cold shower, maybe a lot of jog, do something that wakes you up as soon as possible and do not question it. Nowadays I do a cold shower, but in the past, basically, I would wake up and I would be a bloody automaton, get out of bed, take the Alpha drink, put in my mouth while I'm walking to the gym. I'm on a treadmill. How did I get here? That was how I woke up in the morning and those, I'm probably going to do it again because those are the most productive days of my life, just popping a steam, going on a treadmill like, oh, wow, I'm actually doing something, I guess I do many things today.

And then the other one is just half an hour every day, do something that you want to do, even if it has no benefit what so ever, and ideally something that you're not good at because I could research something that I already know a bunch about but that doesn't feel interesting. I could research something that I've never heard about before that's useful, or I could go out and just get some arts and crafts and make something.

I don't know why I'm doing it, but it's new, it's exciting, it gets the mind going and you can do pretty much anything, but 30 minutes of every day, do something that you're not an expert in, that you have no real background in, but you just want to do it and there doesn't need to be a reason to do it. It doesn't need to be like something that improves your skills, it could be childish for all I care about. I bought Lego sets two months ago. It's awesome. I love Lego. Doing stuff like that will allow you to do a large amount of work because it's just such almost like primal distressing.

You don't have learn more about how to distress yourself, you don't need to go through all these meditations or massages or research. How do I relax myself techniques? There's just something in you and you're like, you know what, I kind of want to do that so do it. Half an hour each day, whatever you want, well, don't make it interfere with your overall life goals. But yeah, just have a bit of fun because if you go a month or two without just having a little bit of fun each and every day, then it's going to hit you. And I've been hit multiple times in the past already. So take that to heart. I'm an expert on failing.

DANNY LENNON: I love that. And so that's one of my favorites and read to memory. I think if I could challenge everyone listening to go and start implementing those couple of things, I'd be very interested to see how people get on. So love that answer and Kurtis it's been great to pick your brain on these various ideas today, so much value for people listening. And like I said at the outset, they can go check out, examine.com and more of your work at Legion if they want to see more of the great stuff that you do, and more of what's in your mind. But with that, thank you so much for taking the time to do this today, my man and for the great information.

KURTIS FRANK: My pleasure.