

The Paleo Solution

Episode 76

Robb Wolf: Robb Wolf here episode 76, I think, of the Paleo Solution podcast. Greg, what's going on dude?

Greg: All kinds of stuff.

Robb Wolf: Well are you going to share any of that with us or we're just going to, you know...

Greg: No. I don't like to talk about my personal life.

Robb Wolf: Okay, it's probably better.

Greg: I'm just kidding.

Robb Wolf: It's safer that way.

Greg: It's definitely Friday, I can feel it. That's what's up.

Robb Wolf: Yeah, so I helped out with the last round of on ramp classes and those wrapped up today. And Chrissie whom I was co-coaching with she was like, "You know, today just feels like it should be Thursday," and I was like, I could probably choke you for saying that because if there was an added day to this week, I just don't think I would make it right now.

Greg: Well, yeah. Teaching people how to squat and do push ups all day long, that'll take to start you out of your bridges.

Robb Wolf: Yeah, and I'm only helping on one of those classes. But it was good, it was a very good group, we got 100% conversion out of that one so that was pretty cool.

Greg: Nice.

Robb Wolf: Yeah.

Greg: Now that is the Nicki Violetti copyrighted on ramp program, correct?

Robb Wolf: Yeah, that's the theory although I think that one of those popped up in the cross-fit journal from someone in Florida claiming to have developed the on-ramp.

Greg: Not cool.

Robb Wolf: Who knows who – who developed it first, oh, except that we actually published it and it was on the internet years. And they used the same mathematical notation for – in exclamation point...

Greg: The same flawed notation?

Robb Wolf: Yeah, 10 exclamation point – we used that in our shorthand notation you know, they say like rosters and pull-ups 10 exclamation point would be 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, but actually in mathematics, it would be $10 \times 9 \times 8 \times 7$ et cetera, so we used it wrong, so it's kind of wacky that somebody else would use it wrong and just kind of pop that up out of nowhere.

Greg: It's pretty sweet little watermark.

Robb Wolf: Yeah, yeah it is, it is kind of funny.

Greg: Oh well.

Robb Wolf: So what else do we have cooking? We've got Gary Taubes coming on here soon, is that next week?

Greg: I think two – maybe it is next week, or two weeks I think.

Robb Wolf: Two weeks from now?

Greg: Yeah.

Robb Wolf: And so we'll guarantee destroy Gary's – you know he's had a successful career thus far, but this will definitely be the apex and decline of his career being on this podcast.

Greg: I will definitely be here on my stationary bike the whole time. And I'm just going to tell him he's wrong about everything.

Robb Wolf: There you go.

Greg: But I'm going to do it in a really condescending, snotty way because I think that'll be a little more interesting for everybody.

Robb Wolf: Right, right.

Greg: It's just for show.

Robb Wolf: We got to make it more – extra entertainment.

Greg: Yeah.

Robb Wolf: We need – what is it? More birthday party than Physics class?

Greg: Yes, definitely more birthday party. Oh, boy.

Robb Wolf: Less Physics.

Greg: Alright.

Robb Wolf: Okay, so what else do we have cooking? We'll get Dr. Kurt Harrison here too, we need to touch base with him and see when his schedule is looking good. Just did a huge podcast with Chris Kesser and Mat Lalonde AKA the Kraken, so that's going to be on the healthy skeptic. I think on his podcast on the 22nd or the 26th, I forget which on, but that'll be out too, and that's a two-hour podcast. It was a...

Greg: Oh my goodness.

Robb Wolf: Yeah, the FCC finally stepped in like, "No, stop. People are killing themselves." So that was a fun time though, that's a cool one so I'll put a like up to that. But other than that, I guess we're ready to go.

Greg: I suppose so. Alright.

Robb Wolf: I finished eating my sweet potato so we can jump in on it.

Greg: Is that your 13th one today?

Robb Wolf: That was my second one. The Japanese jade sweet potato plus a little bit of pasture and butter.

Greg: Oh is that the birthday cake sweet potato?

Robb Wolf: That's not the birthday cake. The birthday cake one is perfect. It's the purple Japanese sweet potato. The Japanese jade is really good. The birthday cake one, it makes me cry even thinking about how good it is.

Greg: I'm sorry I didn't mean to upset you.

Robb Wolf: No, it's good. Yeah.

Greg: Alright. Well let's talk about appendicitis.

Robb Wolf: Let's.

Greg: That was such a smooth segway right there. Anthony says, "Hey Robb and Greg, my family and I have been eating a Paleo diet with a majority of protein from grass fed beef pastured pork and eggs. We also eat good amounts of fruits and veggies. A few days ago, my 9-year-old son was complaining of stomach pains. The next morning after some bilious vomiting, my wife who's an RN in a pediatric ER did some tests and determine my son had appendicitis. Sure enough we took him to his pediatrician who in turn sent him to the hospital.

A few hours later he was clinically diagnosed with appendicitis, no CT scan necessary thankfully and had it removed. It was a near perfect procedure, thanks to my uber smart wife and great staff. And he was home 14 hours after the surgery. So here's my question, could we have done something different nutritionally to have avoided this? I know that appendicitis can be idiopathic, but the doctor did mention that there was a small ball of stool in his intestine which may have been the cause. That's in his son's intestine, not the doctor's intestine but the way.

And of course now we have my brother-in-law that happen because my son doesn't eat any whole grains, and he needs that fiber. I've researched enough in the past to know that the fiber theory is bunk, but as a parent, I don't know if we could have prevented this. To get a little more detail about his diet, he does snack on nuts, maybe one to two ounces a day which I know can be a little much. Also he still has hay-fever symptoms even after giving up grains.

So we decided local honey to his diet about a teaspoon a day to see if it would help. These are the only none paleo things he eats. Could either of these have caused the problem? Thanks in advance.

Robb Wolf: You know, most of the time when you look at these stuff, like if do a little Googling on appendicitis, grain intolerance appendicitis, gluten intolerance, you see really heady leakage with that. And so in this case, I mean the nuts might have been an issue, I mean it could also just been some dumb luck in this case. And you know, the fiber thing is still just

hilarious to me. I keep pulling up that paper that Loren Cordain published journal of the American neuroseutical association where it compares or basically constructs a paleo type diet based on contemporary food groups, puts together a 2200 calorie diet based around lean meat, seafood, fruits and vegetables, nuts and seeds

And these is just a standard, you know, I men there's nothing really shnazzy about it, but it ends up providing 42 grams of fiber. And so you know, this basic paleo diet approach whether you're eating yam, sweet potato, fruit, veggies, whatever, some nuts and seeds, it provides anywhere from like double to four times the fiber that the standard American you know, like AMA, ADA recommended diet is going to recommend.

It's my opinion that most this stuff is an outgrowth of some sort of inflammation, some form of dysbiosis like a shift in gut bacteria. And so there could have been something like that that happened, there could have been an issue with just kind of again, dumb luck, you know, the appendix got occluded with some feces and that was it, you know, that just happens sometimes. I know of a couple of folks that had appendicitis immediately after a pretty big gluten exposure and these folks were not really gluten free already, but they, you know, you can just trace it back to, they had a particularly large meal, it was particularly gluten laid you know, like whole French bread and some pasta.

And within like 6 hours, like they were in the hospital with acute appendicitis and ended up having the thing pulled. So I would mainly chop this off to kind of dumb luck. We might file this one, and when Chris Kresser comes back on the show, we'll fire it to him and see if he's got any ideas on it. But that'd be my gut sense is that this was probably just some dumb luck on this. I doubt that there was too much more you could have done that could have changed the outcome on this.

Greg: Yeah. All the people I've known who've had emergency appendectomies, there's really no obvious pattern to it. I mean my own wife had an emergency operation for it and she had been gluten-free for probably 2 years prior to that.

Robb Wolf: And she's like, you know, a superhero, you can drop her off a building, she's like Wolverine and you know, she puts her arm back in place and just basically heals. So yeah.

Greg: Pretty much, yeah. Alright. Well, so yeah. We'll talk about that one a little more another time, but in short, don't feel bad, it's not your fault.

Robb Wolf: Yeah, yeah. That's kind of a long and short of it that I would tackle on that.

Greg: Alright. Here, this is the first smoking question that I know of. And...

Robb Wolf: Other than the dubious question that we had.

Greg: I can't believe we forgot about that already. This...

Robb Wolf: Maybe it's your short term memory.

Greg: What are we doing?

Robb Wolf: I'm just the same way as the first day I started smoking.

Greg: Yes. Only if that day was yesterday. Alright. So Lindsey says, "Hi Robb, after about 6 months of being paleo, thank you for that, and 7 years of being a smoker, I know the hypocrisy got to me, I'm quitting. I'm about two weeks into it and I'm past the physical withdrawal and perhaps the worst of the psychological withdrawal and perhaps the worse of the psychological withdrawal and perhaps the worse of the psychological withdrawal and feeling good about the change but not so good in other ways, two things, energy is in the toilet and I'm steadily gaining weight despite negligible if any change to my feeding habits which are pristine.

After some research, I discovered that nicotine converts fats storage into energy thus raising blood sugar. That seems to explain a lot although I'm sure things will normalize on their own eventually. I'm wondering if there's something I can do dietary in the short term to ease the transition? Do you have any suggestions for getting through this rough patch, i.e. keep my energy up and hopefully be kind to the waist line? Thanks a for all you do and any advice you might have.

Robb Wolf: Well definitely props to you for tackling the smoking gate like that, it's really, really tough, it's just a huge deal. I would drop in something like some green tea in the morning, a pretty stout brew of some green tea and maybe even you know, part of a dark chocolate bar that would be like 90% cacao, you're going to get some theophylline and some caffeine out of the green tea, you're going to get some synephrine out of the dark chocolate.

All of these things are alkaloids that are proliferally related to nicotine and hit some of the same receptor sites and definitely have some of the

metabolic kind of stimulation that nicotine has, but none of them are quite as addictive. And so I think all of those things would help in indefinitely just trying to get some early morning exercise in. So like if you could, if you could do a little green tea, do like a little bit of dark chocolate, or even do some of these chocolate extract like capsules where they standardize it for some synephrine, it doesn't need to be a huge dose, you know, just a moderate dose, then you get out a do a little exercise, that will dramatically improve your metabolic rate, really help with your energy throughout the day too.

Like if you need a second cup of tea, do a little bit more dark chocolate, you know, again, you know like the 90% cacao is the stuff to go for if you want a significant dose out of that synephrine.

Greg: I like it. It reminds me of the old coffee and grapefruit diet.

Robb Wolf: Grapefruit blocks the cytochrome P450 in the liver so it just keeps all the caffeine, just cranking through your body. Awesome.

Greg: Ah, yes. That's better than smoking.

Robb Wolf: If only the P450 pathway is what dealt with opiate, she could really stretch a lot of stuff out with that protocol, but not to be had.

Greg: Oh boy. Oh well, speaking for addictions, Erin says, "I'm a 32-year-old female marathoner, a marathoner runner, I think marathon runner slash newbie ironman athlete slash newbie cross fitter too, recently diagnosed with hashimoto's and hypothyroid. I do not eat any dairy or gluten anymore, but I still eat a lot of nuts. I'm trying paleo but I train almost 18 hours a week and I need carbs. I train usually twice a day. How should I time my carb intake and what carbs exactly can I eat without creating an adverse immune response?"

Robb Wolf: So...

Greg: That's a lot of training.

Robb Wolf: It's a lot of training. You know, for hypothyroidism you can have a couple of different things that fit in you, one thing, the hashimoto's typically like the diagnostic features of it it's in the auto-immune disease. So that's kind of one piece. Usually we're looking immediately at gluten as kind of a causative factor within that. Part of all the stuff like we talked about virtually every time we get on here, we're talking about gut permeability, gastrointestinal damage, all of that stuff being a predicator, or a

precipitator through this leaky gut our immune response kind of gig, when you throw in a ton of training volume, that leads into a leaky gut response.

Stress leads into a leaky gut response, so basically it creates down the gut integrity. So that's a piece of this thing too, so you could have – so that's one vector that goes into the thyroid dysregulation potentially the hypothyroid kind of scenario basically just being low in dietary iodine either in intake or in absorption could be a factor here.

And if the gut lining is irritated that you're not going to absorb it, and then if we go with another piece of this with that volume of training, it's very easy to over-train, very easy to get in this cortisol dominant state, and with elevated cortisol levels we block the HPTA, the hypothalamus pituitary axis, we block the production of thyroid in two different spots. We block the production or the conversion of T4 to T3; we also block the production of thyroid stimulating hormone actually being released.

So you can get down regulation of the thyroid, you know, like 10 different directions, it's kind of anybody's guess like what the hell is going on with this, but the whole program is definitely leading into a big problem. So I mean green legume dairy-free is a must if you insist on this training volume, gam, sweet potatoes, regular white potatoes, you would take the peel off of them because of the glycoalkaloids and the potential gut damage.

I would really consider modulating your intensity and your volume until you are well. I know that's kind of insane but I would personally prioritize being well before you really start ramping up the training because there's a high likelihood here that if you get a handle on the hashimoto's, get normal thyroid production, that you're going to have a lot better training anyway and you're going to be more productive and enjoy your training better down the road, the would kind of pull back the volume, pull back the intensity a little bit and try to get healthy, just kind of focus on that.

Green legume, dairy-free, ideally 100% grass fed, also removing tomatoes, potatoes, eggplants, if you want add through kind of accounting of all that look back at the podcast that we did with Mat Lalonde, I think that was episode 68 if I'm not mistaken. And he gave a great accounting, green legume dairy free at daily grass-fed meat well-cut fish as a you know, an exclusionary thing is kind of ideal circumstance. Tomatoes, potatoes, eggplants, peppers, pull all those out. Any type of gut irritating item like insades, alcohol, birth control meds, there's a ton

of different things, basically almost any type of medication has the potential to increase gut permeability.

If you get knocked up, then that could lead to all kinds of other complications too. So...

Greg: Yeah, it's a whole another set of problems.

Robb Wolf: That's a whole other set of problems, so – but that's – that's how I would tackle it, I would focus on getting healthy first and then consider ramping your intensity up later.

Greg: Alright. Well, from carbs to protein. We'll Cameron says, during Mat Lalonde's podcast episode, Mat discussed his diet. He stated that he eats for lunch approximately one to one and a half pounds of meat. I was always told that the body can only digest about 50 grams of protein per meal. I've heard the coaches at cross-fit state this as well. As you know, one pound is more than double 50 grams of protein. Can a body digest more than 50 grams per meal? Currently I have to eat five times a get over 250 grams of protein and follow the 50 gram per meal rule.

My current diet allows me to perform very well at crossfit. However, life will be much easier to cut down to eating three times a day if I knew my body could process more protein at one sitting. Thank you.

Robb Wolf: So there's probably a couple of things here. One thing is that people mistakes scale weight of protein for actual grams of dry protein. So like you throw a stake on a scale, and it maybe one ounce, but that actually equates to like 7 grams of dietary protein. And so that's just a thing to kind of consider here. And then the other side of this is that I – somebody spent some time, I forgot if it was Mat or who the heck it was it's been kind of tracked down where this literature came from that said that you can only digest 50 grams of protein at a sitting.

And I don't know how to say it other than, it's just wrong. Like if this was true, then you could not build someone John Wilburn size, like you know, the dude's 325 pounds, eats better than a gram of protein per pound of body weight for that doesn't rely on any like liquid foods for that stuff. So that's one piece to it. And then there's some really interesting literature that seems to indicate that punctuated protein intake seems to produce better results with regards to nitrogen retention, muscle creating and all that sort of stuff.

So instead of these body builder approach which is that you need to never go into that negative nitrogen balance, and you need to eat every – you know, two hours to maintain your blood glucose levels and your nitrogen balance and this is very much out of the (Barry Seaver's) own camp kind of gig. In fact what we find is that punctuated eating, just like punctuated training can actually produce some really phenomenal results. So the long and the short of it is that the 50 gram per meal protein limit is just bunk. And you may actually get better results out of partitioning your food more versus the multiple meals.

There was actually a really good study, if you do a little Googling, three meals a day versus six meals a day, they compared it both with regards to – it was **[0:19:18] [Inaudible]** so it was pretty well done. People ate the same amount of calories, the same protein carb fat ratios, but one group of people ate three meals a day, no snacks, the other group ate six meals a day basically, you know, six small meals but the equal amount of carbs, protein, fat calories were eaten in both camps, and what they found is that the three meal a day people gained more muscle mass, loss more body fat, and over all felt better than the people who were eating the six meals a day.

Greg: That can't be true.

Robb Wolf: It can't be true.

Greg: That's just not possible. I mean honestly, I remember years and years ago, this being 30 grams of protein.

Robb Wolf: Yeah it inches up a little bit. Yeah, it's funny. So yeah, Cameron, you can definitely eat more than that. We need to get some of those coaches apparently to some of Mat Lalonde and some of my seminars apparently.

Greg: So when you go to eat and out, four by fours, that's going to be fine.

Robb Wolf: Usually I do double meet protein style on ketchup and mustard instead of the regular sauce because that's the way **[0:20:25] [Inaudible]**, I actually like the spas myself, but I'll go with three of those.

Greg: What about the grilled onions.

Robb Wolf: I'll get some grilled onions, I'm cool.

Greg: Yeah, alright.

Robb Wolf: It could be a little animal style.

Greg: Yes, now we're talking.

Robb Wolf: Yeah.

Greg: Alright. But see animal style is just not the same with other French fries.

Robb Wolf: That's true. And you know, I will say this, because I am so wickedly gluten intolerant, I never ever even get to consider eating french-fries because every place that cooks french-fries, you know, they obviously deep fry them, they're always deep frying something that contains gluten. But for whatever reason, in and out hamburger only deep fries french-fries. So I actually every one in a while get some french-fries from in and out and they're pretty damn good.

Greg: Yes.

Robb Wolf: But if you don't live in California, then you're pretty much ought to look on that.

Greg: That's why I live in California, we got cool stuff.

Robb Wolf: Alright. 11% state tax, but we also get gluten free french-fries.

Greg: There you go. See.

Robb Wolf: I'm not sure how that pans out for...

Greg: It's a give and take, Robb. Don't ask too many questions.

Robb Wolf: Seriously.

Greg: Alright, speaking of animal fries, Wendy has a question about snacks. And no animal fries are not an appropriate snack, Wendy. Dear Robb slash Robb's team, I've been trying to find a grain-free diet or – sorry, I've been trying a grain-free diet for the past four weeks and I'm feeling pretty good in finding the transition away from processed foods increasingly easier. Just now discovered your fascinating site and intend a 30-day paleo trial to test whether I can shed a few kilos and also increase energy level slash general well-being. On my grain-free trial, lost of snacks have been encourage but revolve around organic potato crisps and dried slash flavored peas or soybeans, et cetera.

Question one, I wonder – please what snacks are allowed if any on the paleo trial or perhaps I wouldn't need any. If no such snacks are recommended, is it okay to snack frequently on the veggies if I get hungry or should I apply a daily limit to veggie intake? Question two, I developed a bit of an intolerance to eggs over the years and wonder if you have any views about such intolerance just dissipating once a person is following a clean organic paleo type lifestyle? I'd love to be able to eat eggs without feeling nauseous and bloated. Thanks in advance for any guidance you can offer.

Robb Wolf: So let's see here, question one which actually has three or four sub-questions in there, are snack allowed on the paleo, yeah, I mean definitely allowed, I mean it's – all just kind of boils down to what you're up to. If you're really shooting for some fat loss, I would mainly shoot for like breakfast, lunch, dinner, maybe a snack in there somewhere. In the snack, I would generally like to see just kind of the same stuff that you've been having, a little protein, a little veggies, a little bit of fat.

It's a little bit dependent on what the goals are. I really wouldn't recommend potato chips or fried soya bean pea type stuff at all I mean just for a variety of reasons. Snacking on some slice veggies seems totally cool. I mean it seems hard to overdo the veggie thing. So that thing is fine. Greg, can you think of any...

Greg: No, no. Just – the way I look at it is, the whole snack thing, I just hate that work, snack. I don't know, maybe it just sounds weird to me. But like you're either eating or you're not. So...

Robb Wolf: Yeah, okay, yeah, yeah.

Greg: ...it's like if you're going to be eating, you need to be eating the same way you'd be eating if it were a quote unquote meal. You know what I mean? So it's like if you call this snack, that seems to be almost like a bit of an excuse to stray a little bit from what you know you should be eating.

Robb Wolf: Right. Yeah, I guess that was kind of my – it was hard to put my finger on it, but that's exactly it. You know, it's – yeah, I mean – you eat when you're hungry and pretty much eat what you want, but just made good choices from it, you know, generally draw from like paleo S type foods and you should be.

Greg: I think too that the whole snack thing comes from people being accustomed to being starving every two hours because they have that blood sugar fluctuation. And so you know, once you clean your stuff up,

you probably should be good to go for several hours, you know, you won't feel like you need to murder somebody if you don't eat.

Robb Wolf: Right.

Greg: And so the whole snack thing, they end up being a completely moot point.

Robb Wolf: Yeah, yeah. I knew there was something to this I just wasn't totally wrapping my noodle around and that's exactly it.

Greg: Well why don't you give your noodle a chance on question number two.

Robb Wolf: Oh, I'll give it a shot here, what is question two here, the egg intolerance. You know, eggs are a common thing to develop an allergy intolerance to. You just pull them out of rotation, you pull all the other offending foods out also, like the standard auto immune protocol really – grains, legume, dairy, tomatoes, potatoes, eggs, nuts, seeds, all of that whole – and give it a month, two months, three months, reintroduce and see how you do.

Typically with an elimination diet kind of protocol, what people find is that they will have some sort of a frequency period with which they can eat a food. And so like with eggs, it maybe that you can't get away with eating it every single day, but you in fact can get away with eating it you know, like every fourth or fifth day or something like that. So what it plays out to is that you can have some eggs on the weekend, you know, you go out and have an omelet or something like that, but you're not able to have it every single day.

But you definitely need to pull, eggs out of the rotation, to try pulling these other eggs out of the rotation, or the other foods out of rotation, the reason for that is that we're trying to get the gut to heal, to get some like fresh sour crout, take some good probiotics, you know, make sure that the gut bacteria is nice and happy and all that stuff, and then reintroduce and kind of see how you do from there.

Greg: Alright. I should have put this next one right next to the protein intake sealing because this is another one that...

Robb Wolf: It's right in there. Yeah.

Greg: And I just – there's so many parts of it are awesome too, like it's not just the basic thing, it's like all the circumstances surrounding it as well. Alright, Craig says, "My girlfriend is a very recent graduate of nursing

school and has been very helpful of my transition from a fellow vegetarian to things with a face eater," good job Craig, "but she's very hesitant about my adaption of the paleo diet mostly based on her contention that the brain cannot function properly without complex carbohydrates such as pastas and rice.

I've been 98% paleo for the last two months with a few slips into ice cream hell. Can you give me a medical explanation that will help me in this battle? She will not join the meat eating bandwagon, but has definitely reaped the benefits of switching our diet to entirely whole foods. She's in complete agreement with this aspect of paleo nutrition but can't understand the low carb effect on the brain and other important bodily functions. Thanks for being such an accessible and reliable scientific resource.

Robb Wolf: Little does he know we just make up the stuff up.

Greg: Well I don't know. I thought you kind of knew what you were talking about.

Robb Wolf: No, it's like a monkey at a typewriter. If I get anything right, it's purely by accident.

Greg: So that's why we're asked more questions per episode, just increases the probability of you being correct.

Robb Wolf: Yeah, then we get something right. Yeah. Oh man, how the hell – how to tackle this one, so as a baseline, is this thing again where it's like the only carbohydrates in the universe are not grains and legumes. It doesn't boil down to just bread and pasta.

Greg: Well then how do you get your fiber?

Robb Wolf: That's true. Okay, you're right. Let's close that shop. You're right, damn it. It's over for us. It's all been a sham, we've lost our lease.

Greg: I'm sorry, continue.

Robb Wolf: So – God. There's always going to be a new flight of medical students a new flight of nursing students and so again, I guess in some ways, it's that is job security, but up until the point at which I blow my brains out over this stuff because it's just like, oh, we're not going to win. But so – I mean, so it's really important to remind your girlfriend, who – congrats to her for graduating nursing school – it's a tough profession, hopefully she's

very gratified by helping people who generally refuse to help themselves because that's what most of medicine kind of boils down to these days.

But all of that aside, there are these wacky things called fruits, vegetables, yams, sweet potatoes, roots tubers that have quite a lot of carbohydrate matter if you need carbohydrate matter as part of your operation. So you get potentially not only plenty of carbohydrates, but much more nutritionally dense carbohydrates. Dieticians, doctors, and nurses all like to talk about calories. And so they say we should eat pure calories because we're fat because we eat too many calories even though the neuro-regulation of appetite completely blows that theory out of the water, but that's completely different story.

But these guys can't think in systems yet, so we'll still keep this like kind of, you know, if the cow jumped over the moon kind of complexity on this stuff. So right now, you know...

Greg: I don't understand that analogy at all, but I like it.

Robb Wolf: Well it's just simple. It's simple, you know.

Greg: That seems actually like a pretty complex endeavor having a cow jump over the moon.

Robb Wolf: Well how about sea spot run?

Greg: Okay, good I like that one.

Robb Wolf: You know, a sea spot run kind of idea, you know it's like linear – so nothing complex at this. So if you need carbohydrate, you can definitely get carbohydrate from non-grain and legume sources. That's just a baseline. Then it really begs the question, "Do you need carbohydrate at all?" And so in my hands I've got Stryer – textbook of bio chemistry, this is the fourth edition which is a couple of years out of date, it's probably about six years out of date, this is the one that I used in grad school, and my one year of Med school, a very good textbook.

Page 770, this is in integrated fuel metabolism, page 770 like five paragraphs down, glucose is virtually the sole fuel for the human brain except during prolonged starvation or the state of ketosis. And then we scroll down a little bit. During starvation or over ketosis, ketone bodies **[0:30:58] [Inaudible]**, its reduced counterpart are generated by the liver partially replace glucose for the brain. So we can convert up to 70% of

the brain's function over two ketone bodies which are water soluble fat derivatives that the brain can run on just fine.

And then we flip the page over just a little bit further, and let's see here where was the other piece here that was talking about the heart, let's see here, I think I lost it. No, the metabolic pattern of resting muscles is quite different in resting muscle fatty acids or the major fuel source. Ketone bodies can also serve as the fuel for the heart in peripheral muscles; in fact the heart muscle consumes acino-acetate in preference to glucose.

The heart – the lungs, the kidney, different organs actually run preferentially on ketone bodies. They run better that they do on glucose. When we look at some things out of the stuff like Thomas Seyfried of Boston University, the metabolic control analysis. And the way that brain metabolism changes under the state of ketosis even though there are some brain tissues that still require glucose, the state of ketosis actually stabilizes neurological function, it normalizes function under conditions like epilepsy, it's very beneficial for a variety of conditions ranging from Parkinson's to Alzheimer's, astrocyte and glioblastoma, brain tumors. So I don't know how much more ammunition you need in this.

Greg:

Well, and what about just plain old gluconeogenesis?

Robb Wolf:

Yeah. And so that's a great point which is that, you know, if you scobble together a ketone body production with gluconeogenesis where we convert the glycerol backbone, lactate and then also any type of gluconeogenic amino acids. You can convert all that stuff into glucose and you can very easily produce 50 to 100 grams of glucose a day from a moderate protein intake via gluconeogenesis. So that you know, just because dietary carbohydrates are restricted, doesn't mean that we're not going to get some carbohydrates out of the mix.

And it's not to say that that is the best way to go, or the worse way to go, it's a tool, it's a way of doing all these stuff, but you know, just this simplistic model that the brain only runs on glucose is absolutely ridiculous. If you are carbohydrate adapted and you pull all the carbohydrates out, you're going to feel like ass for a couple of day, you're going to be foggy headed and you're not going to feel good, you're cognition is going to drop, and then about two weeks in, you're going to be fully fat and ketone body adapted, gluconeogenesis will have ramped up to provide whatever glucose that you need for the brain, and you're going to be fine.

Unless you're doing very high intensity of exercise like crossfit which is very glycogen demanding, in which case you should probably eat some more carbohydrates to supply the glycogen demands, but that's completely different story.

Greg: And they don't have to come from pasta and rice.

Robb Wolf: And again, they loop back around, they don't have to come from pasta and rice. So you know, cod liver are allied health sciences folks, but this is in every goddamn textbook that goes out to nurses, doctors, nurse practitioners, pharmacist, but none of you people bother to read it. Like when I taught Chemistry to a nursing and medical students, they forgot their biochemistry as quick as the possible could.

So when these people, whether it's a doctor, a nurse or whoever, they're complaining about like, "Oh, you know, ketone bodies and blah, blah, blah." So open up your textbook that you still have collecting dust on your shelf, open it to the ketone body section and actually read what is in your own textbook and see what the heck is in there. They were like, "Oh, the brain actually can adapt to ketone bodies." The heart runs preferentially on ketone bodies so does the liver, the intestines, you know, and on and on and on. So yeah, that's my...

Greg: Well.

Robb Wolf: That's my story on ketone bodies. By Robbie Wolf.

Greg: That sounds like your brain is running just fine.

Robb Wolf: Yeah, I got my glucose uptake from my, you know, Japanese jade sweet potatoes, it's like...

Greg: Sounds like you got a little help with the cortisol too just now.

Robb Wolf: I did. It suppressed my cortisol so I'm good. You know, I'm not trying to be mean, but you know, if folks are in this allied Health Science or Health Science kind of profession, and they claim to be a scientist or you've gone through this stuff, like I cut nobody in the medical Sciences any slack on like anatomy, physiology, biochemistry, cell biology. If you have it, just because you passed the test, you are still accountable for it, specially if you're now getting it wrong with regards to applying it to a living breathing pool of people that you interact with everyday.

And you damn well better get this stuff right because it's costing billions of dollars and lots of lives because you guys are collectively getting these stuff wrong.

Greg: Yeah.

Robb Wolf: And that – as I see that, I'm probably you know, pissing off and ostracizing all the people who are already bought in. Obviously, these folks who are already bought into this who are health practitioners, I'm not talking to you, but I'm sorry I'm being a jerk about all that stuff, but this is just like when I gave the – in a little hospital talk, I was very mean to these people because you know, and I asked them, I would ask basic biochemistry questions, basic integrated metabolism questions and these people could not answer it.

But you know, I would say better that 50% of them were there to tell me that what I was saying was wrong but yet, they don't even remember this stuff to a degree that they can have an intelligent debate about it.

Greg: Right.

Robb Wolf: So you know, like – when people start talking about like computer servers or Russian literature and stuff, I just bow the hell out because I don't know. OR even in areas like this stuff, like I'm definitely not strong in immunology at all. So as people start talking about T-cell B-cell conversion, blah, blah – I just – I don't participate in the contest because I don't understand it. I've had a couple of immunology classes, but I do not have a deep enough steeping and it's been long enough away in you know, my brain, then I'm not going to get in and really commentate on that stuff at all.

If I'm going to, then I'm going to sit down and educate myself on it, so that I can have an intelligent opinion about it, and not just pull stuff out of my fanny because I've got some background in this, but not the background that would actually allow me to be a legitimate commentator on the topic.

Greg: Oh, boy.

Robb Wolf: I guess that's kind of a novel deal.

Greg: Yeah, imagine that.

Robb Wolf: So I probably made everybody mad on that one so sorry guys.

Greg:

Well it'll be good, it'll steer them away from being mad at me for being mean. Let's talk about something more important than grammar. Joe says, my wife had a myocardial infarct last year at the age of 26, she has suffered with a whole bunch of problems over the last 8 years or so including severe joint pain, chrones like bowels problems and a peanut allergy. Since the heart attack, things only seem to have gotten worse and has been bounced around several consultants. Lupus is suspected, but no firm diagnosis yet.

She's a strict vegetarian, very resistant to the idea of eating meat. I feel that that paleo approach would seriously benefit her and I'm working on how to do that within a vegetarian framework. She will eat eggs, but I know now you're feelings on that with people with auto immune problems. Milk was also out as she's pretty clearly lactose intolerant. Sorry for the rambling. The cross of my question is, do you have any specific information on the paleo diet with regards to systemic lupus erythematosus?

My wife has a medical background, so if I can point her at some actual papers, it would really help.

Robb Wolf:

You know, there's some stuff brewing on lupus specifically with the paleo diet, but the thing is, you don't at this point need. All that you need to see is some stuff that generally indicates auto immune diseases being improved with a standard protocol. And like we have so much data on that stuff. And if she doesn't want to include animal products, then the next best thing that I would do is a grain legume dairy free kind of vegan approach in which she does.

Tons of coconut products, very, very well-cooked vegetables, supplement her omega 3s with algae so she gets some long chain DHA, supplement with vitamin D, but I really think that she's missing the boat on not including you know, like grass fed meat walcott fish, but she could do that standard auto immune protocol, no grains, no legumes, no dairy, avoid tomatoes, potatoes, peppers, you know, the whole nightshade stick, avoid any type of gut permeability increasing element like N-sades, alcohol et cetera, cook her vegetable really well, anything with a peel, remove it, this is just kind of covering your basis, this is really getting to be fastidious on it, but the idea here is to reverse the lupus.

And in – even, the funny thing with all these stuff is that you can have elements of the immune system responding in a way that is irritating the complimentary immune system, the secondary immune system that

creates anti-bodies, but when you go and look for this stuff on a standard blood test, when you're looking for allergies, when you're looking for antibodies, it doesn't really fit a classical description because you have these kind of arbitrary line drawn in the immunological function doesn't just fit within those lines in a super meat package.

So this is all of our understand of understanding like a permeable gut, leaky gut, the autoimmune response leading into things like non-alcoholic fatty liver leading into metabolic treatment. But that level of irritation can also cause problems with the rest of the immune system that basically puts it on a heightened kind of response. And then you can get some weird kind of cross reactivity in which say like the immune system starts attacking the heart muscle or the rest of the skeletal muscle system or even the smooth muscles of the gastro intestinal tract which is some other auto immune diseases.

So the stuff we're working, the thing that I hang it on, again, is this is 30 days, 30 days – you're wife is sick, she's already had a myocardial infarction at age 26, what other motivations does she need to give something a try for 30 days to see if she can put her lupus into remission? If she's certainly not going to kill herself in 30 days, but she might reverse this whole thing in 30 days. So whatever the other – you know, she can try it in this kind of vegan approach if she wants, but I really don't understand the reservation on the grass-fed meat walcott fish side of that, but she can do that however she wants, this is her life, she's got to figure out what's important for her if potentially living a long life is important, then she might consider actually being flexible on this stuff and modifying her food to adapt this.

And I know that's kind of harsh, but when people are this sick, I was sick like this, like I was sick and thought I was going to die. And I just think, God, I found the stuff that I did, and this is also a part of the reason when people ask me, it's like, "Is it hard to stick with this?" And it's like, no, it is not hard to stick with this at all, because I was going to die at like 26, 27, I had ulcerative colitis, irritable bowel syndrome, I was facing a bowel resection, I had depression so bad I wanted to kill myself, and I had high blood pressure and bad triglycerides.

And typically, things, you know, you expect things to keep getting good through your 30s at least before you start you know, your life starts falling apart when you're 40 whatever, and my stuff was falling together, falling apart at late 20s. So you know, I guess I'm fairly impassioned by this, she should at least get in, and try this thing on for a month and see what the heck happens, specially if you have kids or all the rest of that

stuff. I think you owe it to yourself, owe it to your husband to give this thing a shot.

Greg: Yeah. At least – at least try out the vegan route first, give that a legitimate shot, and if that starts working for you, then you know, consider starting to add in meat.

Robb Wolf: Yeah, and that would be my argument, like if things improve with the vegan approach, then as a scientist, she's got a medical background, give some grass-fed meat, some walcott fish a shot for 30 days and see how you do. And if it doesn't work, then fine, you can go back, it doesn't mean that you never change – you know, you can't change the direction the boat goes again, but maybe it gets a lot better because you're actually getting all the micro nutrients that you need, you know, just B vitamins and all kinds of other co-factors, colleen to help your liver metabolism function better.

A whole bunch of stuff that you would really benefit from, from having that protein intake higher. So that's my sales pitch. It was – maybe this thing is going to save your life.

Greg: That sounds pretty good.

Robb Wolf: But I don't know. Sometimes a life isn't worth saving and people want to be more stubborn, so I don't know.

Greg: Well, Joe, good luck to you and your wife.

Robb Wolf: Yeah.

Greg: And keep us updated on how that works out. Alright, some a little bit simpler, less intense stuff to try to calm you down; this is like you cool down there Robb.

Robb Wolf: Okay, okay.

Greg: So we don't want you to – you know, pull a hammier or something.

Robb Wolf: Pull a hypothalamus?

Greg: Yes. Alex says, "I was chatting with a cross-fitting paleo eater who's having problems with muscle cramps. She comes from a medical background and explained to me that the mechanism or muscle craps involves magnesium, slash calcium, slash phosphate balance and

electrolytes. She did a little research and found out that grains are good sources of magnesium. We were wondering if by cutting out grains, paleo eaters are – "I'm sorry, I can't even finish this sentence without laughing. Give me a second. "Paleo eaters are vulnerable to magnesium deficiency and does muscle cramps. Would you please enlighten us on this topic?"

Robb Wolf: Oh man, so...

Greg: I'm even more prone to laughter right now because I'm so sleep deprived. But I just – I can't help it.

Robb Wolf: So again, we'll put out Cordain's paper, journal or the American Nutraceutical Society paleo diet based on contemporary food groups, folks on that basic diet are getting 6 grams of magnesium a day. It's like 12 times what Americans are generally getting. The Americans are typically getting less than a gram of magnesium per day. If there's anything in this that I would say, is that people are eating a standard diet which is usually fairly heavy in sodium, may end up being a little bit sodium depleted specially because we bring insulin levels down – oh God, I was just talking about the whole aldosterone, and the crossfit thing like **[0:46:23] [Inaudible]** aldosterone and the crossfit thing.

Greg: Yes.

Robb Wolf: Robbie doesn't even talk about aldosterone and blah blah – that whole thing.

Greg: Except for in this video from his...

Robb Wolf: Except for these three videos, yeah.

Greg: ...lecture about 100 years ago.

Robb Wolf: But anyway, a few people will know what I'm talking about and that's fine. But you know, long and short of this is that you get lots of magnesium from meat, fruit, veggies, nuts seeds, et cetera, you might actually need to add a little bit of sodium if anything. And specially in the early stages of switching over to paleo because you're going to attend to – you're going to – lower insulin levels, lower insulin means less aldosterone, less aldosterone means you retain less sodium, you retain less sodium, you retain less water, and that can lead into some cramping.

So I would be more – of a mind to say that this is a sodium issue, and you know, the calcium magnesium issue, that all gets addressed easily by a

standard kind of meat, fruit, veggie, nut seed, you know, root and tuber paleo diet. There's just no problem with that.

Greg: Root and tuber, that sounds like eye-hop meal.

Robb Wolf: The root and tuber. This week only eye-hop the root and tuber.

Greg: Alright. Is that the finalization of your thoughts on muscle cramps? I didn't mean to cut you off.

Robb Wolf: Yeah, I mean – no, no. You probably took me off the point, yeah, that's it. That's all we need.

Greg: Alright. Alright, last one for today, Ryan says, "Have you heard of people getting acne plus a generally more oily face when then start using fish oil? I've always though that fish oil would prevent breakouts, but after getting my wife to start using them, she stated to breakout. I initially thought that it was something in her diet. But she told me that her sister started to breakout too when she started taking fish oil. Any advice? Maybe switch over to the algae pills?"

Robb Wolf: So maybe one person in 30, one person in 40 that increased intake of EPA and DHA that you would get out of fish oil or the increase intake of DHA that you would get out of algae capsules actually increases sebaceous gland production of oil and that increases some of the – prostaglandin production that leads into acne formation. Cordain has an e-book, the dietary cure for acne, we were threatening to bring him on the podcast like over a year ago, but he started writing his most recent book.

He just wrap that up a couple of days ago, we're going to get professor Cordain on the show at some point. And he'll really walk us through all those mechanisms. But what we – what I can tell you right now is that folks who tend to get acne and oily skin from taking fish oil, may benefit from taking about 10 to 15 milligrams per day of GLA and either primrose oil or borage oil can be good sources of GLA. GLA is actually an activated intermediate chain length of omega 6s. It's in between the linoleic acid, and arachidonic acid in that omega 6 elongation pathway.

And I has some specific activity in the prostaglandin family of you know, **[0:49:35] [Inaudible]** and prostaglandin inflammation mediators. And some people again, maybe one in 30, one in 40 benefit from increased GLA consumption relative to EPA and DHA. So I would actually recommend that she pull the fish oil, add just again, maybe 10, 15 milligrams per day of GLA and see how she does with that.

Greg: Well, any final thoughts you'd like to share with the internet?

Robb Wolf: No. I'll just apologize to everybody that I probably attacked on this one because I probably pissed off a number of people, but...

Greg: He does it out of love.

Robb Wolf: No, that's about it. Anything wild happening for your weekend?

Greg: No. I'm going to try to keep it as unwild as possible for once in my life.

Robb Wolf: Me too, me too. I just live vicariously through keystones, so – that's they way I roll.

Greg: Yeah, I'm sure I'll be in here on Sunday trying to finish the rest of shooting for that stupid DVD.

Robb Wolf: Wait? When is that done?

Greg: Well, If I can finish the shooting this Sunday, then it means I can probably – we can get the editing done the next, I don't know, three or four weeks, so – my spring 2011 prediction remains intact. Although it maybe late in 2011.

Robb Wolf: What's the title of the DVD? The other title hammered out and what the content is?

Greg: It's essentially going to be the – a companion DVD to the weight-lifting book. So the DVD we have out now is basically, we just recorded a seminar I gave a few years ago, so it's very basic, and I mean – it's been helpful to a lot of people but, I've been meaning to get something a lot more detailed out there, so this is it.

Robb Wolf: Right on. Cool. Well, keep us posted as that thing gets closer.

Greg: Alright.

Robb Wolf: Alright, gee, thanks man. Talk to you soon.

Greg: Alright, see you.

Robb Wolf: Later.