

The Paleo Solution

Episode 9

- Andy Deas: Robb Wolf, Andy Deas. How are you today?
- Robb Wolf: Good. I've got the gato at my right and coffee in my left so I'm locked and loaded.
- Andy Deas: Dude, coffee past noon. Man, you're crazy. I had to switch to tea. Otherwise, I just can't sleep I think.
- Robb Wolf: I had a friend. Oh, it's pretty off color. I'll pass on it right now. I have a commentary on tea, and I'll share it with you later.
- Andy Deas: I appreciate that. Thank you for not sharing that with the world.
- Robb Wolf: Yeah.
- Andy Deas: All right. So we got another good group of questions this week. I think we're going to start with one on dairy and soy and inflammation. I think it's a good question. We'll start from there and then kind of spin through the list. How does that sound?
- Robb Wolf: Sounds good.
- Andy Deas: All right. So we got a question from Jesse, "I'm a long time CrossFitter, and follower of your blog." He just saw this study posted online by the Conditioning Research blog and wanted to bring it to your attention to get your take on it. It focuses on dairy intake actually lowering inflammation in obese test subjects. He doesn't understand the body chemistry enough to make sure of why this would happen. So this is from the American Journal of Clinical Nutrition, and I know you got a chance to take a look at it so why don't you give us your thoughts on that, Robb?
- Robb Wolf: Okay. So we have this original piece that was done, like he said, American Journal of Clinical Nutrition. We'll post the link to that piece. The title of it is "Effects of Dairy Compared to Soy on Oxidative and Inflammatory Stress in Overweight and Obese Subjects". So the folks they basically are providing some dairy type protein sources, dairy sources versus soy sources, and then they're measuring some various markers of systemic inflammation. They have some ways of assessing oxidative stress,

malondialdehyde production, some inflammatory markers including tumor necrosis factor, interleukin 6, and some other goodies.

And then this other item called adiponectin which -- adiponectin is a hormone that is usually released by fat cells, and it is very, very synergistic with lectin. And both of these things -- both lectin and adiponectin have some really potent effects on our levels of body fatness and our perception of hunger and whatnot. Typically, if we have high adiponectin levels, then we have low body fat levels. So it's an inverse kind of relationship with this thing.

So in this study, they fed these folks soy, and they fed these folks the dairy. And then the folks who ended up getting the dairy, ended up getting some dramatically decreased levels of systemic inflammation particularly the adiponectin metabolites, and so they were basically saying, okay, dairy is a good source for anti-inflammatory kind of effect of the diet which if you were to talk to me, I would normally say that dairy would be a pro-inflammatory sort of food for a couple of reasons. One of them being lectin load is being carried through the gut, so animals consuming grains, the lectins of those get concentrated in the dairy. We consume that dairy, and so we've got the potential for some gut irritation from that. And then also dairy is a pretty potent insulin simulator.

And so that high insulin level would then theoretically produce some high systemic inflammation. And so this study would seem to kind of point that -- would be a wrong assumption, but it definitely paints the fact that soy sucks. So that's probably as good a thing as we can get out of that. So that's kind of the background with that study. A couple of days ago I received another study from Pedro Bastos, and that one is from the well-read journal, *Liver International*. And that one -- the title of this is "Serum Adipokine Levels Predictive of Liver Injury from Non-alcoholic Fatty Liver Disease". Non-alcoholic fatty liver disease is essentially fatty liver that is associated, typically, with insulin resistance.

And so in a lot of my talks I mentioned people that when we consume carbohydrates, the carbohydrates can fill either liver or muscle glycogen. If it fills liver glycogen and once that liver glycogen is full, then any additional carbohydrate that goes into the liver typically starts producing triglycerides. Those triglycerides they can lead into elevated triglyceride levels systemically, which will bring down insulin sensitivity and also can lead to what -- they just write it here, non-alcoholic fatty liver disease. And this fatty liver, it's basically as the liver literally becomes marbled and inundated with fat, you can imagine that the normal processing of the liver -- which the liver is our detoxification organ. It breaks down all the

hormones, environmental toxins, all that sort of stuff and helps break them down, make them more water soluble typically. And then we remove those toxins either through the feces or the urine.

So during non-alcoholic fatty liver disease, you end up getting worse and worse and worse liver function. What they found in this study, however, was that high adipokine levels, the same thing that we're talking about in the other paper, tends to be counter to the fatty liver problem. If you have high adipokine levels then we tend to have low relative fatty liver disease. And so what they're finding is that high insulin levels lead into this problem of inflammation. And so what we seem to be seeing here on the one hand is that dairy reduces these problematic -- or actually it would -- is reducing some problematic things like tumor necrosis factor, interleukin 6 and whatnot, then it's elevating some beneficial things like the adiponectin. My pronunciation of that is horrible.

So all this stuff is kind of like okay, whatever. What the heck is going on? But when you dig in a little deeper in this adipokine metabolism, what we find -- and I'll pull up this paper so I can tell everybody the title. We'll have this in with the show notes. Do I have the right one? Let's see here. I have another one here. Oh, here we go. I have it in a different browser window. This other one is from adiponectin magnesium and arterial stiffness, this went into the trace elements and in electrolytes, Third Quarter, Volume 3. It's basically a book that talks about trace elements and minerals and whatnot that relates to medical pathology.

What this thing is talking about is that adiponectin is mainly driven -- its levels are driven more by minimal status than by anything else. And the folks in the original paper mentioned this that the high calcium containing dairy products are likely the reason why the high adiponectin levels are occurring. But what this other paper indicates is that by simply taking a magnesium supplement daily, you get exceptionally high levels of adiponectin.

So if we go all the way back to Protein Power Lifeplan and the chapter that they had, the Magnesium Miracle, we've known for a long, long, long time that magnesium is a really important cofactor for a number of different metabolic processes; energy production, ATP production, all that sort of jive. Every once in a while we'll have something pop up on the radar that seems to indicate that calcium is really important for energy production and fat loss and all that sort of stuff. And this is kind of the main claim to fame that dairy products have for kind of fat loss related stuff.

Whenever a study pops up that shows that dairy has some sort of anti-obesity, anti-fat sort of effect, the main effect that they seem to hang all this stuff on is on calcium. But my point here is that we can get the same effect from magnesium.

What we need to find -- and I didn't have time to do a whole lot of digging on this stuff, but what do we see with regards to adinopectin levels in somebody who is eating a grain-free, dairy-free Paleo type diet magnesium, that's getting adequate levels of calcium, but then we're not getting any of the other systemic inflammation markers that we're seeing from the standard like grain based diet.

So I don't know if all that stuff makes sense, but the basic deal there is almost any of these that we're talking of dairy, even wheat and rye and oats and barley, all of these things have constituents in them which we would normally call anti-inflammatory or they would work as antioxidants. So none of these foods are like 100% bad. But then when we look at the food as an overall experience for what it does in your body, then our net effect may not be that great. Something that these folks were not considering when they looked at the effect of dairy on these inflammatory markers if we had net acid diet over time, that in and of itself becomes systemic inflammatory problem. So I mean it's a really complex topic and probably everybody has turned off the pod cast and is asleep as this point. But that's my best analysis of this whole thing.

Andy Deas: So you really simplified that, Robb. It only took 10 minutes to get through it.

Robb Wolf: I know. It was complex for me, and so I can imagine it was kind of like, "Eesh, what's going on?" The take home out of that is that the main anti-inflammatory effect with regards to the adinopectin in my opinion from that dairy is from the calcium contents of dairy. We all know that dairy ends up having a net renal acid load that is net acid loading. So in the long run that's only not getting us anywhere, and then we know that some simple administration of dietary magnesium, either via vegetable matter or something like the Natural Calm or just like a ZMA supplement or something, that also affects favorably the adinopectin content that -- or our circulating levels of that, which the higher the adinopectin and lectin levels then the lower our body fat levels are.

Andy Deas: Yeah. And I think the other take away for me is that little brief snippet of time where you talked about sort of the overall experience of the food because I think to your point, some of these studies are looking at very

myopic outcomes and not considering things sort of in the grand scheme or the net acid load and all those interesting factors.

Robb Wolf: Yeah. And this is that thing again which is perfect for somebody to give it a shot. Throw in two or three glasses of milk a day and see how you feel and perform for a month. And then hold that two or three glasses of milk a day or yogurt or cottage cheese or whatever out and see how you will feel and perform. And if you feel like you do better, then God love you. Go for it. I mean it still should be largely hung on this experiential situation. But what we see again and again and again is that when people remove by and large dairy out of the diet, then they tend to lean out, and they tend to have lower levels of inflammation as reported by recovery from exercise and some other issues.

Andy Deas: Sure. All right. Good stuff.

Robb Wolf: Hopefully or it was a great cure for insomnia or whichever helps you so....

Andy Deas: Well, hopefully we'll weave in some simpler questions as well, Robb. We don't want to lose any of the five listeners.

Robb Wolf: Totally. Yeah, that would be horrible.

Andy Deas: One listener and we drop by 200%. No, I'm just kidding. All right. so next we got a question from Miss Spinach, and it's kind of a two-parter. So first she says, "Interesting validation on the one gram of protein per pound of body weight rule of thumb." She's a recovering semi-vegetarian and gluten intolerant individual who finds it difficult sometimes to shovel in that much protein without help of some digestive enzyme supplements. Question 1. She's confused about which macronutrient makes it easier for the body to utilize the amino acids it is getting from the protein one is eating; by eating more protein or by eating enough fat? "In short, why might I feel better supplementing with certain amino acids even if I'm eating plenty of protein? Should I skip the aminos in pill form and eat more protein or skip the aminos in pill form and eat more fat? My concerns are fairly general, to maintain performance, leanness, and sleep/mood."

Robb Wolf: Holy cats!

Andy Deas: That's a good question, Robb.

Robb Wolf: There's a mountain of stuff going on there. So folks know that I do generally recommend protein intake levels that would be above, say like

standard zone levels. So we've seen a ton of people that were following like a weight-measured zone, went kind of unweighed, unmeasured, Paleo, saw some significant performance uptick. And probably one of the biggest factors that they have is that they started increasing the level of protein that they were taking in. And typically they were upwards of a gram to a gram and a half of protein per pound of body weight per day. The deal with that -- I talked to James Fitzgerald about this stuff, and he's like, "Yeah, people might benefit from more protein, but ultimately this goes back again to absorption."

And Sarah, who is Miss Spinach, alluded to this. She finds it difficult to deal with that much protein without the help of digestive enzymes. I totally agree with that. And this is where maybe you don't even need a gram of protein per pound of body weight. What you need is some digestive support so that you can actually absorb the amount of protein that you need just out of, say like 0.75 grams per pound of body weight, much more along the line of zone recommendations. I'm not really too sure where all that stuff rates out. I do know that a ton of people benefit significantly from the addition of a digestive enzyme.

I really, really like the NOW Foods Super Enzymes. This thing has betaine hydrochloride in it which is hydrochloric acid, folks. If you use it wrong, it can hurt you. So if you use this, bad on you, like you're warned right now. If you use this right, people have a tendency of like kind of half hearing what I mentioned in the podcast and then jumping in and doing stuff. If you're going to use this NOW Foods Super Enzyme, you got to use it right. You need to take it with a meal that contains protein and fat. Protein is something that was alive, that got a face and a soul. Beans and rice don't count, nuts and seeds don't count.

Then when you start with one capsule per meal, and you see how you feel from that, then you go to two capsules per meal. You increase the number of capsules per meal until you feel a slight warmth in the epigastric region, right where you imagine your stomach to be. Once you hit that level, if it's like four capsules per meal or five capsules per meal or whatever, then you dial it back by a capsule, and you keep running at that level until you can titrate down to three capsules then two capsules then one capsule.

What's happening typically is that people are hypochloritic. They have low stomach acid. They're not producing enough stomach acid. They're not producing enough kind of digestive fire to digest their protein or their vegetables or their fats, like the whole mix is kind of stymied. A zinc tally test is another way that you can help this stuff. I'm not going to touch on

the zinc tally test right now. I think what we're going to do is actually shoot a short stretch of video on that because a picture of this stuff I think would help. We can draw some photos and draw some pictures and kind of actually illustrate what the whole zinc tally test is involved but that's a piece of all that stuff.

So that's the whole digestion enzyme supplements and all that. So you may or may not need a gram of protein per pound of body weight. You very, very much likely do need some sort of a digestive support. I think most people would probably benefit from that. Again, you just give it a shot. Are you able to feel and perform better? Do you feel like your digestion is better? Are your poops looking better poops? And all that sort of stuff. If you haven't checked out your poops, then I guess, you probably don't have any digestive problems.

Then on this other piece where Sarah is asking about should she or should she not take specific amino acids in addition to just eating more protein, amino acids -- she doesn't mention which one so it's really hard to help with this. Arginine taken by itself before bed or pre-workout seems to be a really potent stimulator of nitric oxide release and of growth hormone release. And so maybe that's good. People who are generally overweight, they frequently are carnitine deficient. Carnitine is an essential amino acid in the process of transporting fat into the mitochondria of our cells to be used as a fuel source.

Some people, especially if they are -- this is where like the high carb, low fat, low protein diet can just bugger people that inadequate carnitine levels to be able to metabolize their fat. This is where somebody who's heavy even though they may weigh 300 pounds, we're trying to get them to eat 300 grams of protein a day -- one thing that's very satiating and they tend not to have any room to eat anything else after they try to get to 300 grams of protein in, but then also they're getting adequate levels of carnitine and some of the other amino acids that are important in fat metabolism.

So without knowing exactly what Sarah was taking and for what, it's kind of hard to comment on whether or not she should or should not take these other amino acids, branched-chain amino acids are great pre and post workout. I don't know if that's the stuff she's talking about. In general, kind of the ketogenic diet tends to be protein sparing, so a higher fat, lower carbohydrate, moderate protein diet tends to be protein sparing. So instead of using protein as a fuel source, we tend to use it as a building material, so that is helpful. Andy, does that seem to answer that question? Does that make sense?

Andy Deas: I think they make sense. I think it's a further reminder that we need to do in early January the supplement show which I'm sure will generate, in and of itself, 100 offshoot questions. But I think it will help on some of this stuff, kind of whittle the list down to what we think are the meaningful ones, et cetera.

Robb Wolf: Right. Well, we'll see.

Andy Deas: Well, four hours later you'll still be talking, but I don't know if anyone will be listening at that point.

Robb Wolf: Probably not. My wife definitely does not so....

Andy Deas: All right. Cool. Let's move to the second part of Sarah's question. "Question about glycation. If the body can convert dietary protein into sugar if too much protein is eaten, how much is too much, when you're dealing with someone who is really overweight and for whom the one gram per pound rule means a huge amount of protein? I'm worried about giving this advice to someone who is visibly insulin resistant. But getting that guy to eat more protein is probably easier than getting him to eat more fat. Everyone is so fat phobic." So what are your thoughts on that one gram per pound of body weight rule as folks are to get heavier and heavier?

Robb Wolf: This is straight from Poliquin. Poliquin was pretty insistent that you push people in this direction, and I alluded on some of the whys previously. One of them is that it's a really potent appetite suppressant, protein is. It really -- it's satiating. People tend not to get hungry. They have the thermic effect of protein. So we tend to burn comparatively higher calories processing protein versus carbohydrate or fat. That's a real moderate consideration. But I mean it still kind of factors in there.

And then there's also the carnitine deficiency which most people that are this large, may in fact be carnitine deficient, and so trying to get them to eat that much protein is very, very helpful in that regard. And there's the other issue that people have a tendency of bitching that they're hungry. And so this is the deal where it's like, "Oh, you're hungry?" Well, 300 grams of protein ends up being like 300 ounces of protein -- or not 300 ounces. The one ounce is seven grams so it's like 150 ounces or whatever that breaks down to. That's a lot of protein.

So when you lay out a meal plan for somebody like that, well, you need to eat basically like eight to 10 ounces of protein plus some vegetables

plus have a little drizzle of fat with it, and you need to do that four or five times a day. Then get back to me about how you're hungry after that. Now, if the person bitches about like, "Well, I'm bored with this," or whatever, then that's their own problem, and you need to figure out whether or not they're going to comply or how you're going to motivate them or what's going on. But they're not going to be hungry on that. They may in fact be people who – they may be getting off of crack, but it's not as yummy as Little Debbie Snack Cakes, but that's not what they are theoretically coming to you for if you're a coach or trainer or whatever.

So there's some good back story on all that stuff about that level of protein. Everybody from Mauro Di Pasquale, Poliquin, I think even Check gets up in that higher protein level. But all these folks too are definitely looking again at how the digestive fire is going, like are people actually making enough hydrochloric acid to be able to digest any of the protein that they're eating.

Andy Deas: Yeah. I think the other thing that folks – that I always like to be reminded of is that even if you're eating lean cuts of meat, there is some fat in the animal. I mean obviously its' predominantly protein, but it's not like they're eating straight protein.

Robb Wolf: Right, right, absolutely.

Andy Deas: And so I think that's an important consideration. But I think we see that this works. I don't know if a lot of folks, even if they're 300 pounds, can eat that much grams of protein in a day. But I guess more power to them if they can actually consume that. But I think most of the folks find if they can get closer to that one gram, obviously depending on the digestive stuff, they tend to feel better. They're fuller. They recover from workouts better. I think most things get better.

Robb Wolf: Yeah. And people -- Michael Rutherford, Josh Everett, just a ton of people that I really respect, all these people if you - when I've asked them what's one thing that you noticed really makes a difference in you recovery? And they're like a gram of protein per pound of body weight just done. Now, none of these people -- I haven't worked with Josh on his food. Interestingly in January I'm going to start working with him to make another run at the games.

So we're going to start working together. We're going to definitely be looking at his digestive situation and all that stuff and work with him. I don't know if Rudd has really looked at his digestion or anything. But that's another piece of the puzzle to look at. Are these people producing

enough digestive enzymes? Are they -- would they benefit from digestive support? And if so, then do you still need that gram of protein per pound of body weight. I'm not sure. That's still -- that's a newer area for me for sure.

Andy Deas: Yeah. That would be something really interesting to kind of see how all that plays out because --

Robb Wolf: Yeah.

Andy Deas: -- that would make a big difference in some folks' diet. For myself I do better when I get back closer to that one gram of pound of body weight. But I feel like I'm always eating.

Robb Wolf: Right, right.

Andy Deas: It just takes a lot of effort. I know some folks that are always hungry. I don't fall in that camp. It is hard to eat 240 grams of protein a day.

Robb Wolf: That's a lot of fuel to drive that truck.

Andy Deas: That's right. That's right. It should be the theme of the podcast. All right. Good. Next, we got a question from Chris. It's a three-parter. We're actually going to skip part 3, glutamine because we're going to put that in the supplement podcast. But the first one is "You mentioned in one of the podcasts that liquid food causes an insulin response and should be avoided until after fat loss/weight loss. But what about soup? I have found it really useful to put all my non-starchy veggies and sometimes meat into a soup. Whenever I have felt like eating fruit I just have a mug of this and it stops the craving for sugar, also seems to keep me fuller for longer. So is this okay if all ingredients are paleo/no starchy carbs or will it still mess with an insulin spike?"

Robb Wolf: Anytime we -- the more we process any food, the greater the relative glycemic load or insulin load is going to be. So now if we take -- this is the problem where -- it was really funny. One nutrition gig that I did, this guy was just all fired up about juicing, and he kept saying, he was like, "What about apple juice if I juice fresh organic apples?" And I'm like, "Well, if you have fresh organic diabetes in a glass, it's sugar." And so he was kind of bummed out that it kind of made sense. And then he's like, "Well, what about beets? And what about carrots? And what then about spinach?" And he just kind of went down the glycemic load. It's like more and more -- or less and less concentrated vegetable sources.

But then what he was doing was juicing them and stripping away all the fiber and everything and just leaving basically the water and then whatever the carbohydrate content of that stuff is. And even spinach or wheat grass juice ends up having a fairly high amount of carbohydrate content, glucose content, and there's absolutely nothing to slow its entry into us. You make eight ounces of that, and you shoot it down, and you basically just took like 25 pounds of broccoli or spinach or whatever and shove it all down at once.

Now, a soup obviously is not that processed, but yeah, it does increase the glycemic index, glycemic load, insulin load of some. I don't know how much. It depends on the vegetables. It depends on how much you cook it. I mean all this stuff is just really, really variable. But we were just -- a second ago we were talking about like, say, some potential digestive insufficiencies that people could have. They may have low stomach acid or something like that. Soups are a great way of trying to deal with this because it actually makes it more digestible. When somebody is healing from a serious leaky gut, kind of coming off a gluten sort of gig, some sort of autoimmune issue; soups and stews are phenomenal for this situation because it's actually easier to digest it. But if it's easier to digest, then you have potentially a higher insulin load or glycemic load. So there are tradeoffs with all that.

Andy Deas: Yeah, I think so. Some of it goes to where are the goals? Where are you sort of in the process or working on digestion first? Do you think digestion is good? Are we working on leaning the person out? I think the other thing too is to play with it. I mean I find for myself I tend to cook a lot of stews with a ton of meat, and it makes it super easy to consume large amounts of vegetable matter. To your point, the glycemic index is probably raised a little bit. I don't know that I personally see that as a big deal, especially in the winter when I'm cold and I'm a big wimp and trying to stay warm.

Robb Wolf: Exactly.

Andy Deas: So all right. And the second part of his question which I think is a good clarification is Chris says, he has whey post-workout with water, glutamine and greens. He always thought that whey protein less protein so would not cause us insulin spike. What are your thoughts on that?

Robb Wolf: All proteins release insulin, dairy proteins release more insulin than pretty much anything else. And protein typically also releases some glucagon which can have a little bit of counter regulatory effect on the whole insulin thing. And really what glucagon does, in my opinion,

besides the mobilization of carbohydrates of lipids for energy utilization, glucagon release actually helps normalize insulin sensitivity. There's a whole interesting feedback with all that stuff. But the whey protein definitely releases insulin, and it releases it in significant amounts.

Andy Deas: Yeah, which I think is -- I think we talked about it, and I cannot remember the episode anymore. Generally, the folks, before they start to play with whey; our experience is they should lean out before they start playing with that stuff post-workout.

Robb Wolf: Absolutely. And then in that situation it may be a great kind of low carb post-workout recovery deal where you have essentially like whey protein, maybe whey protein and a tiny bit of fat or something like that. And that could be a really effective post-workout approach.

Andy Deas: Cool. All right. Good question. I think the second part of Chris' question I think is good for clarification. "Omega 3 eggs. Thanks for talking about them already, but is there any way of knowing the DHA/EPA levels in the Omega 3 that's added? Or could the Omega 3 be poor quality like poor quality fish oil. If so then would it not be better to have organic free range eggs and dose up the high quality fish oil instead?"

Robb Wolf: Wow! This question reminds me a lot of Nicki's questions that she asks me where she will ask me a yes or no question about something that is completely nebulous and like some sort of sliding scale. There's really no way to ultimately know the EPA/DHA levels of a given batch of eggs. I mean it's going to vary from chicken to chicken based on, say like if they are out free ranging, then they're going to have different levels EPA/DHA based on the amount of bugs versus the amount of grass they're eating. And then if they're being fed flax seed plus grains, did they get more flax seed or did they get more grains?

I mean generally what we're banking on is that the Omega 3 enriched eggs have more than other stuff. And the label frequently -- if you flip the card note then it will say approximately what it is, and I think within food regulation and guidelines it can be plus or minus 10% of that, and so you kind of hang your hat on that. Whether or not it would be better to have free range eggs -- organic to me may just mean that they were fed organic grains, and that just seems retarded to pay a bunch of extra money for organic grains because it's still going to have the problem of the Omega 3 - Omega 6 ratio being skewed towards the Omega 6 and too much arachidonic acid potentially and all that.

So I mean probably your best bet is if you find somebody who is just pasturing their eggs themselves, you know, the chickens are just running around eating whatever they want to eat, and then you just kind of call it good with that. Otherwise, we'd still try to track down one that claims to be an Omega 3 enriched egg.

Andy Deas: Right. Questions are getting more complicated, Robb. You're going to have to up the game.

Robb Wolf: I know, man. I did this podcast to try to streamline my email intake, and now I'm spending two hours of pre-reading. I think we should ask the questions. I don't think it's saving me any time at all.

Andy Deas: Oh, Robb, if people get to hear your voice now, so much more entertaining than some of your dry attempts at sarcasm in your articles.

Robb Wolf: Great. Yeah. My spell check doesn't have to get worn out.

Andy Deas: That's true. No one can comment on your grammar challenges. All right.

Robb Wolf: Yeah.

Andy Deas: Next question from Will, "Thanks for all the great info." Each week he looks forward to the next installment. He's accumulated a few questions over the last few podcasts. First one, "Symmetry - you mentioned a bodybuilder who had good symmetry in a podcast," he thinks number 3, "and it reminded me of Art DeVany's comments about Paleo eating improving body symmetry. Do you agree or have other thoughts or experiences on this?"

Robb Wolf: I don't think Art was talking about food necessarily being a driver of symmetry other than just being lean. I think Art talks about the X-shape, that kind of broad delts, trap development, you know, low quad development, calf development of which I have absolutely none, not even from Thai boxing. So I guess I have an upside down A-development as far as that goes. So I don't think that had to do with all -- with like -- in my interpretation of that the food. It was more kind of the training philosophy, and then the food was just driving the leanness.

Andy Deas: All right. Good. Next question, based on your explanation of problems with nuts, he have stopped eating 200g of almonds per day and has totally gotten into light coconut milk and shredded coconut but would like some variety. Did you say that walnuts and macadamias have better

composition than other nuts? What about unsweetened baker's chocolate like Lalonde used in his experiment?

Robb Wolf: Macs are a good option. I think they're a little better than walnuts, but both of those are not having better Omega 3 - Omega 6 balance. But again it's a short-chain omega 3 which I'm just not -- man, I'm not a fan of any of that stuff really, and I have to say from personal experiment and lots of feedback that we're getting, people are doing better on the coconut than what they were doing on the macs or the walnuts or any of that stuff. So I would just encourage folks to try that, and then maybe here and there use some macs. But I mean it's totally up to you. Roll with it however you want to, but I just see people doing really, really well on the coconut. The unsweetened cocoa stuff, I would have never really thought about as a fat source. I know it has -- unsweetened cocoa has some stearic acid as the main fat in it. I guess you could do that. It definitely is loaded with antioxidants and theophylline and all that stuff which makes you feel -- theobromine makes you feel in love and all that jive. So that seems good. But I don't really see it being like a fat source per se. I think Matt used that mainly just as kind of like antioxidant deal and kind of a nice snacky -- just something different to throw in the mix.

Andy Deas: Yeah. And I think what's interesting about this question a little bit to me, and I don't know Will's background but it reminds me sort of a lot of -- a lot of folks, what I call a zone land, always get caught up in, "I got to have my fat with my meal," and all those things. I think a lot of us in some cases end up with cooking with various fats. Obviously, all the meats we're eating have fats in them. So a lot of our meals are meats, veggies, and it was cooked in fat. I don't know that we're -- all of us, Matt Lalonde being the exception, main lining full cans of coconut every day. They're not always making these huge coconut curries. In a lot of cases, we're cooking with olive oil or just kind of rolling with whatever of that stuff is left over and the meat -- and eat our meat and veggies.

Robb Wolf: Yeah, totally.

Andy Deas: Yeah. And so I know nuts are super convenient because they're portable and all those things, but it's like not every meal do I see a lot of folks eating a ton of nuts. I think as I said, sometimes in zone land we kind of get that idea that we need that. But there's fat in all the meats that we're eating. We're cooking with fat, and that's sort of how we roll.

Robb Wolf: Yeah. And that's probably planning -- that's probably as much as you're going to need.

Andy Deas: Yeah, yeah. All right. Good. "Also, there were some posts after a previous podcast about fish oil oxidation countered by Vitamins C and E, but Lalonde pointed out that such high doses of C and E have downsides. Can you comment on this?"

Robb Wolf: Real high dose antioxidants seem to shut down the whole hermetic effects. Hermesism is this process whereby you get exposed to some sort of an environmental irritant whether that is sunlight or exercise or similar things like that, that you then adapt to. And interestingly, real high dose C, E, and some other antioxidants appears to be so anti-oxidative that you do not get the same type of adaptation that you would from exercise.

So we had this understanding that there is an oxidative theory or an oxidative component to aging and lots of diseases, and that's true. But then the interesting thing is that by dosing people on super high antioxidants, we don't see those diseases going away necessarily. We may even see other types of diseases getting worse and other problems getting worse. So it doesn't mean that oxidative damages isn't a problem; what it means we need to manage it in a smart way.

So like if you're -- again, if you're taking a standard kind of Paleo/Paleo Zone sort of diet, you should be getting tons of C, E, all these antioxidants and other types of antioxidants that are not really vitamins per se like mixed carotenoids and all that out of the vegetables that we're eating in our diet, and that should be plenty to counter fish oil oxidation, and most fish oils come with a little bit of vitamin E in it to help prevent oxidation anyway. So that should be fine. This also, by the way, is part of why taking NSAIDs like ibuprofen post-workout for muscle soreness actually limits your adaptation to that exercise.

Andy Deas: Put down the NSAIDs.

Robb Wolf: Yes.

Andy Deas: All right. Next question from Will. This is my question of the week, Robb. Not for any reason other than I'm hungry. "Bacon- it doesn't seem to fit with your preference for lean meat but you say you like good bacon, so what makes for good bacon?"

Robb Wolf: Kind of like what makes for like a hot fanny on a chick. I don't know. You just -- you know it when you see it. Crispy bacon, Trader Joe -- apple with smoked bacon is real good. We had a whole pig that was raised on like almonds, apples, oranges. It was like free range pig or whatever, and it

was like the best pork that we've ever had in my life. And so if you can find some sort of a local farm. And you know what? Actually, that reminds me, I need to remember we can put this in the show notes.

There's actually an organic pork producer that is located right outside Chico. It's called Llano Seco Pork, and it's like humanely raised and all that sort of stuff, low carbon footprint, if you're into all that sort of jive? I'll try to remember to put that in the show notes, and then folks can actually order products from them.

Andy Deas: And I will make a note, Robb, as the person responsible for keeping the wheels on the track that I get that information from you and put it in the show notes.

Robb Wolf: I think that you got a personal interest in that. So I think that would get done.

Andy Deas: And I think the bacon question is interesting because we do spend a lot of time talking about eating lean meats, but I know you and I consume a fair amount of bacon.

Robb Wolf: Yeah. And I mean the -- and again it just kind of plays out in the wash. Breakfast food may be a little fattier, and then the rest of the food usually balances out and just a little bit on the leaner side. It ends up being like some grass-fed ground beef from Trader Joe's or like they have some really inexpensive whole chickens at Trader Joe's. Like I baked one of those yesterday, and Nicki and I ate on it for a day and a half and all that so....

Andy Deas: Good bacon makes me happy, Robb, so....

Robb Wolf: It makes everybody happy.

Andy Deas: All right. And last question from Will, and this is I think another interesting question. "How to 'tinker' well – I understand that tinkering is a basic element of figuring out what is right for each person but can you provide some advice on how long to try a diet change and any suggestions about how strict to be in keeping other variables constant since life isn't conducted in a lab? I sometimes make adjustments in my diet and see a difference in performance after a couple weeks but then wonder if the difference is coming from the change in diet or if it's because my sleep was different or because my coach made adjustments to my lifting program or some other factor."

Robb Wolf:

Well, I mean if you were taking things to that level, then this is probably the point where you want to start weighing and measuring your food. If you're really legitimately wanting to keep that type of control on stuff, then you might want to weigh and measure your food so that you can keep that factor as tight and controlled as you possibly can. I think you can get a lot of mileage out of simply like low carb Paleo where -- let's say we're trying to fuel a CrossFit games athlete where -- like Jolie Gentry, Laura DeMarco, other people that we've worked with. Most of their meals are protein, veggies and fat eaten pretty much reckless abandon. They just eat to satiety, and they feel good. Post-workout meals are protein and carbs; carbs mainly kind of from things like yam and sweet potato, maybe some applesauce. And we get remarkable success with that.

I mean these people are just killing it, and they continue to make progress on that unweighed, unmeasured approach, such that I don't feel compelled yet to get in and start weighing and measuring those foods to figure out where else we can go with their nutrition to try to get some greater improvement. We've weighed and measured what they are doing. We discovered the Jolie tweaked her protein up and her fat up and everything, and so observation we're kind of like, okay, she's eating more protein and fat, and she's doing better, and there we go. But I'm not seeing a need to tweak thing because she's still making PRs like week to week, month to month.

So I think one of the biggest points at which you will start tinkering is when you cease to make progress. If some part of your game ends up flat lining, and if that means that you're trying to lean out and you flat lined, and you need to take a greater -- a little detail on it, if you're trying to gain muscle mass and you flat line, then you need to take a better degree of detail on it. So I think it's whenever you stop making some sort of progress that you start really needing to tighten up your game and look at what you're doing so that you could make some informed decisions about how you're tinkering.

Andy Deas:

Yeah. And I think some of this we've talked about comes back to where you are in the life cycle development, and how much are you willing to chase some of the small amounts of improvements? It's like for a lot of things -- I'm going to paraphrase Kelly Starrett here and know when he said this he was not talking about some of these other factors. But if you don't see change, you didn't make change. So it's like for me like the nut thing. It's pretty obvious when I pulled nuts out, I felt better. I was leaner. And that was good enough for me.

There are other things that I think I could track and really spend a lot of time worrying about, but I'm convinced that the percentage of improvement would be so small that in the grand scheme of my life it wouldn't be worth it. I'm not an Olympic athlete by any means. I'm not trying to get in the Olympics. So some of this stuff, kind of like Lance Armstrong who's in an elbow position on his bike in the Tour de France, it doesn't really matter to me.

Robb Wolf: Right. But for them it does.

Andy Deas: Yeah, absolutely.

Robb Wolf: And that's a great thing to keep in mind. It's like who are you? Where are you at? What are your goals? What are your needs? It's just as fallacious to take the needs one desires of an Olympic athlete and try to stick that on a generalist as it is to take the lack of need for neurotic behavior on the part of an Olympic athlete and also apply it down in the generalist. So yeah.

Andy Deas: Absolutely. Good question. All right. I got a question from Randy. He has a trainee who is looking to switch over to Paleo and trim down a bit. She has had two kids and half of her thyroid removed. "My question is how much of an affect will missing part of her thyroid be on her losing the little extra chub and will I need to prescribe and extra low carb approach or should traditional low carb Paleo be enough. Any info on thyroid effects and diet would be great."

Robb Wolf: It's tough to tell here. It's not so much so she's got half a thyroid. That doesn't really matter so much as what are her actual thyroid levels, like her T3 and T4 levels? Does she have normal circulating levels? If she's not producing adequate -- is she taking something like Armour or Centroid to bring that stuff up. So it's really a matter of what is her actual thyroid level?

And so assuming it's normal, then -- and there's a little caveat within that because we've seen a number of women who are in the "normal" level of thyroid, and they ended up supplementing with the 150 mcg per day of iodine, and they ended up seeing some improved body composition and some improvements, and what appeared to be some insulin resistant type stuff like a little bit of the polycystic ovarian syndrome, some endometriosis, and stuff like that. It was some kind of thyroid or hypothyroid driven insulin resistance that a little supplementation with some iodine ended up fixing. So that's just the whole other kind of complex deal. But 150 mcg a day is a normal recommended daily

allowance of iodine so that is not going to hurt someone for them tinker with it. Obviously, have them check with their doc and all that stuff, but they should be good to go checking that stuff out.

Now, any thyroid effects with regards to the diet, if she's already missing part of her thyroid, then this is where I think being really fastidious on that whole gluten-free Paleo diet is huge because we know for a fact that gut irritation is -- if the precipitating element for autoimmunity is that gut irritation and a significant section for the autoimmunity is focusing on thyroid function like Hashimoto's thyroiditis and some other hypothyroid conditions are definitely caused by or worsened by gut irritation. So if the individual is already running on half a thyroid, then I would be **[0:48:21]** **[Audio garbled]** the other half that she's still got.

Andy Deas: Robb, are you walking into a well right now?

Robb Wolf: Am I drifting away?

Andy Deas: You're breaking up a little bit. I don't know what to --

Robb Wolf: I'm here. You were breaking up last time, but I guess your recording was okay. But no, I'm still doing the same gig.

Andy Deas: All right. I'm just going to -- I'm just shutting down anything else on my Mac here that could be stealing bandwidth. I don't think I have anything open that could be, but I'm just trying because I don't want to impact the quality of your delivery to the world, Robb. This is good stuff at this point so....

Robb Wolf: My delivery stuff is bad enough as it is so you'll have no argument of error on that so....

Andy Deas: We're just trying to stay 1% above the suck line, Robb, 1%. All right. so next question, "I am really enjoying your podcasts. I've tinkered with low-carb diets for controlling my type II diabetes and have had a hard time sticking with them. My biggest problem is sleep and restless legs. I get to the point where I am almost frantic for sleep and my legs will not stop. I will go get bowl of cereal or a Cliff Bar and I go right to sleep and my legs stop." So let's start there. Any thoughts on that?

Robb Wolf: I'm going to be a huge dick here. You can continue that process until the Type 2 Diabetes kills you, and your restless leg **[0:49:47]** **[Audio gap]** good. I'm kind of being a jerk, but I mean we have something like really significant 100% preventable issues going on here. So this is something

that will get you – if you want it dealt with, you're going to have to stop and deal with it and get through it. And I mean Type 2 Diabetes is like having sunburn. It is reversible. You have sunburn from overexposure to sun. You have type 2 diabetes because of overexposure to insulin and carbohydrates. Is there going to be a difficult time getting through that? Yes. Is any of this stuff going to get better short of just addressing the issue? No. Restless leg syndrome has to do a lot with vitamin B3, like riboflavin metabolism. You can add some B3 into the mix. That may help you, but cereal and Cliff Bars are not going to fix your shit. It's just not.

Andy Deas: Okay. And then also "I've been doing some research on tryptophan, its precursors and insulin and am wondering if there is a connection to what I'm experiencing?"

Robb Wolf: Yeah, definitely it can be. When we have chronically high insulin levels, we actually tend to get serotonin receptor site burnout. So not only do we get insulin resistant, we get serotonin resistant in our brain. Tryptophan is the precursor for serotonin and melatonin, and that's definitely a part of what's going on. Lights Out: Sleep, Sugar and Survival talks at length about this stuff. And it's one of those ironic fixes that when people go on a low-carb diet, and they actually adhere to it that they end up getting dramatically improved sleep. That's another spot where I would throw in like some Natural Calm. The fizzy magnesium stuff can help with this. But still this is a metabolic problem.

Andy Deas: Sorry for the laugh in there, Robb. We're getting all types of feedback today so.... It sounds like you're clicking at your keyboard, but I know you're not because you're talking, and you can't talk and type at the same time. There's no chance in hell. And I'm not typing on my keyboard so....

Robb Wolf: No, no, I'm just sitting here so....

Andy Deas: Tell that Keystone cat to calm himself down today.

Robb Wolf: If you could see him, he's about as calm as he gets but yeah.

Andy Deas: All right. And then the last part of this question is, "I feel like the lack of sleep then lowers my mood, my ability to get out of bed and exercise and raises my cortisol levels. I worked nights as an RN for 12 years and my sleep cycles are problematic at least half of the nights for me anyway."

Robb Wolf: Ooh, boy, the sleep schedule thing is just death. I didn't -- when I was looking at this originally, this is almost like an arch typical, like night shift curse. You have sleep disturbances that will lead to like typical --to a low-

carb diet for any length of time. You just got to get in and do it. There [0:52:58] [Audio garbled] for a diabetic nurse counselor. You could have a good job and help people from the stuff that you've been doing I guess would be my suggestion.

Andy Deas: Yeah. That's a tough situation. It's like you got to fix the sleep.

Robb Wolf: Yeah. You have to fix the sleep then you just got to jump in and tackle that nutrition if you want all this stuff to alleviate and to actually get some forward progress on it.

Andy Deas: Yeah. All right. we're going to try one more question, Robb. If you get any more dicey breakout, I think we're going to call it good or else it's going to sound horrible. Let's give it a shot here on this next one. A question from Sean asking what our take is on this product? I think it's Omega Mega3. I think this is one of those GSE products.

Robb Wolf: Right. I'm not a fan of the stuff. The folks who make it contacted me and wanted me to give them a product endorsement. They weren't even really aware that the short-chain Omega 3's are definitely not the same as EPA and DHA. I guess they will keep a vegan alive, and I guess that's a good thing, but I'm just not really a fan. I'm not a fan of supplementing with the short-chain Omega 3's. That's about as good as I can give that one.

Andy Deas: Don't worry Robb, that's only like the fifth one similar that we got about the GSE. So it's a very popular question so I wanted to make sure that we included that because you have spoken. You've shared your opinion with the world for better or worse.

Robb Wolf: And they seem like really nice people. It's a nice idea. If folks want to throw a couple of tablespoons at the back a day, I don't think that's going to hurt them. But it's really, really supplementing with that short-chain Omega 3 and expecting it to do anything remotely like supplement with EPA/DHA is just completely false.

Andy Deas: Yup. All right. So Robb, we're going to do -- I think we have time for one more question. I think we're going to drop down to this -- we're going to skip the next question and drop down to the question from Jason. Starting off, "Hello Solutioners!" I like that. We are now branded as Solutioners. I think that's cool.

Robb Wolf: Gee, it snowed. It completely snowed.

Andy Deas: So he has a pretty unique question I thought, and he provided a lot of detail which I don't think we need to get through to talk about. But basically what he said is what should his short-term aims be if his ultimate goal is to improve work capacity in all aspects? So I would say this is like the classic CrossFit question. I want to be good at everything, what should my short-term goals be?

Robb Wolf: It's that same thing again, like they take Louie Simmons, anybody that plays with the strength sports a lot, all these people understand that strength before strength endurance -- period. And there's a bunch of like posturing and just bullshit that goes on with that, but stronger athletes can produce more power -- period. And then so you need to get -- if we're talking specifically CrossFit, then you need to get strong and technical in the movements that comprise CrossFit for the most part; so squat, deadlift press, push press, pull-ups, road climbs. I would argue you should have some competency of walking on your hands.

I would love if the CrossFit games to see some sort of an event where you do some sort of a metabolic deal, and then you have to traverse 100 meters walking on your hands. Last year we saw people who were at high levels work capacity but had learned or saw how to do a muscle up minutes before the event. The year before that, we had people see the clean and jerk in some sort of a controlled format sometimes for the purpose of time minutes before that.

And so what this is reflective of is a very nascent early young sport. And at some point people are going to follow that progression of essentially like a couple of years of legitimate gymnastics training, a couple of years of legitimate Olympic weightlifting or powerlifting training and then periodized punctuations of work capacity development that looks exactly like what you would do for a wrestler or anybody -- middle distance runners, something like that, somebody who is glycolytic and aerobic athlete but needs some sort of power steeping. And so that's how you would chase all this stuff.

When you look at how mixed martial arts has developed, you saw like the Gracey's originally who pretty much thumped on everybody because the Jiu-Jitsu that they brought to bear was different enough and effective enough that they could shut down people who only had a standup game or other grapplers didn't have the technicality and submissions and all that. And so for quite some time they were able to kind of ride the wave and beat everybody, and people started figuring out their game. And now for people to be effective in mixed martial arts, they need to have a significant steeping in wrestling, including freestyle and Greco.

They need to have a steeping in Jits. They need to have a little bit of a Thai boxing game, particularly clench. They need some sort of a Greco clench. They need a legit boxing game. And so they get steeping and development in all of these different areas, and nobody can be world class in all of them, but if you can get somebody to that like A level Jits game, A level type boxing game, B level Greco and freestyle game, then overall you have somebody who is a potential world champion in mixed martial arts.

And I think we've got a similar story there playing out in the whole sort of fitness with CrossFit in that you need somebody who is going to have some damn good technicality in the lifts and in some basic gymnastics elements and then probably 800-meter to two mile running being very, very efficient in at least that modality but then also wickedly efficient at shorter distances too.

Andy Deas: Yeah. And so I think to me it goes back -- so I think this is common with most sports is if your goal is to improve in all aspects that they can get as strong and as powerful as you can, and you get as technical as you can, and then you can layer all of that work capacity and everything on top of that down the road as needed based on when you're in competitions and things are.

Robb Wolf: Right, absolutely. I mean so much of why boxers can box for so long is because they are efficient. So much of why wrestlers can wrestle so long is because they are efficient. Some of the challenge of CrossFit is that you change day to day, event to event. You change the events sufficiently, that it's hard to always be efficient what it is that you're doing. That's some of the challenge and some of the cool opportunities based with it also. But to whatever degree you can find efficiency in as much of those movements or this is where really delineating what are the important things that I need to be good at.

Do you need to be real, real good at a power clean and a snatch or do you need to be real, real good at a med ball and a sumo dead lift or if you've got a double body weight clean and jerk, is that going to give you enough horsepower on the med ball clean or some of the dead lift to get you down the road. And that's some stuff that people need to be smart about how they're programming their stuff to be successful with it.

Andy Deas: Sure. Yeah. And also encouraging you to practice what you suck at.

Robb Wolf: Exactly. Although within the Poliquin realm of that, there's possibly an argument too to keep a real strong eye on what you are good at too.

Andy Deas: That's true.

Robb Wolf: You may be able to get some good mileage down the road and be able to compensate for the shortcomings. I just had a consult with a guy earlier today who when you look at everything he's bringing to bear, he's like 205 pounds, 530 deadlift, low 2 minute grace, and he said, "I just really, really struggle at the longer WODs." And I have found that he's been trying to do more and more WODs. He's been doing some CrossFit endurance and some stuff like that, and he was like, "I'm really getting fat in the mid section." And I just asked him, "Well, what type of sports have you always done?" He's like, "Wrestling, shot putting, blah, blah, blah." And I'm like, well, just somehow -- what his parents did came up, and his dad was an Olympic giant slalom skier, and his mom was a professional tennis player. It's like so where does this dude come from? He comes from a stock of explosive powerful people who probably don't do real well in the development of slow twitch muscle fibers.

And so they can gut that stuff out and do it, but is that where his best strengths lie? No, definitely not. And we saw some pending metabolic derangement and cortisol problems because he's been pushing his work duration and intensity out past really what he's wired up for. Like the dude is wired up to be a fit, strong, 205, 215 pound dude with a 600-pound back squat, 600-pound deadlift, and like 350-pound bench. He's built and wired up to be like an NFL linebacker, and he's trying to turn himself into a middle distance runner decathlete. And if that's what he wants to do, that's fine. But I told him, "Why don't you really chase that 600-pound dead, 600-pound back squat, get your bench up, get real good at 200 and 400 meter sprints and get super efficient at that, and then let's come back six months from now and see where you're at, and we can contemplate like peaking or some sort of an event.

But let's build the big engine. Let's build a bunch of efficiency, and let's get your metabolic derangement dealt with so that your strength and body weight ratio was better," because right now he's probably carrying about 15% to 18% of body fat; whereas before he was carrying about 12% body fat which is real telling. The guy got fatter by doing more work which is that whole cortisol thing again. We see that again and again and again. When people start doing super and normal volumes of training and not periodizing, not dealing with the downtime effectively, but that's all bullshit and pseudoscience anyway so....

Andy Deas: Good answer. I think at that, Robb --

Robb Wolf: I was going to wrap up on that.

Andy Deas: Before you spin off the tracks, we're at an hour and five today, Robb. I apologize to our listeners. We do have some funky clicking. We're going to have to get to the bottom of that. I think someone had commented on the notes that it was annoying, and I couldn't figure out what they were talking about today. But as we're recording, I can hear it live. So I know we're not – neither of us are typing. So we got some feedback stuff to work through, but I think we'll work through the audio levels now. So we solved one problem. We discovered another one so we will get --

Robb Wolf: I told you that we would find something else to bitch at you about and there you go.

Andy Deas: I know. I think the post said, "Andy, your typing is really annoying." I'm like, "Typing? I'm not typing." But anyway, that is it for episode 9, Robb. Thank you for your time, and I will talk to you next week.

Robb Wolf: Dude, thank you. We'll talk to you soon.

Andy Deas: All right. See you, man. Bye.

Robb Wolf: Bye-bye.