

# Paleo Solution - 167

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Robb: Hey folks, Robb Wolfe here. It is sunny in Reno. Greg, what's going on man?

Greg: I just got back yesterday from lovely snowy North Carolina, spent the weekend at Wake Forest University with coach Ethan Reeves, Joe Ken, Ron Mccaffrey and a bunch of people who wanted to come and learn about stuff.

Robb: Nice. So how does one strong-arm their way into an event like that?

Greg: I didn't. Coach Reeve contacted me many months ago and asked if I would come present and of course I jumped on that because that's a big honor getting asked to come out by a guy like that.

Robb: Seriously.

Greg: It was awesome. The travel was brutal as you can hear. Still not feeling that great.

Robb: Shocker. So we've got episode 166 PaleoSolution podcast. You're just getting back from some travel back Wake Forest. How many folks attended this gig?

Greg: Probbably about 75 or so...

Robb: Nice.

Greg: So there was a morning session about four hours were a bunch of primarily high school athletes and their coaches and then a bunch of other high school collegiate strength coaches observing those guys when I went through teaching progressions for lifts and what have you. And then the afternoon was coach Mccaffrey, coaches Ken and me just speaking for a bit about sundry strength and conditioning matters.

Robb: Some hip-hip and what not?

Greg: Exactly. So what'd you get done this weekend?

Robb: What did I get done? My good friend Patrick Johnson came up and got to hang out with him, his wife and his four kids.

Greg: The fidgiest fudging farmer.

Robb: The fidgiest fudging farmer, yup. And he absolutely smashed me doing about three hours of jujitsu. My sternum is still not...

Greg: You don't fight farm kids. They're just too tough.

Robb: You do but you lose, which is what I discovered. So did that work on some of the paleologic stuff? We are hashing out our whole sale stuff for paleologics as well as a program for helping both medical practitioners and gym owners if they want to incorporate the paleologics gig into their scene. And I changed diapers and played with Zoë and lifted weights a little bit. That was pretty much the weekend.

Greg: Sounds good.

Robb: We had a low 6 degrees and a high of 18 yesterday but it's a little bit warmer today.

Greg: Cool.

Robb: So it's chilly around here but it's sunny at least. I can suffer a pretty good ass whooping so long as the sun's out. We have a pretty nice setup where its south facing and kinda protected from the wind so I've been able to sit outside in shorts, no t-shirt, 20 degrees outside and actually get a tan and not be chilled form the whole thing.

Greg: That's like rockstar lifestyle right there.

Robb: Seriously man, yeah.

Greg: You have your own windless sunny area.

Robb: Yeah. I just need like hookers with cocaine in their back sides to snort it from and everything would be great.

Greg: Indeed. Alright we mention some show sponsors before we proceed.

Robb: Show sponsors, our newest sponsor, The Performance Menu, The Journal of Nutrition and Athletic Excellence, [performancemenu.com](http://performancemenu.com) also if you

got [catalystathletics.com](http://catalystathletics.com) you can kind the performance menu there coming up about 100 issues of the performance menu.

Greg: It's really all the same thing.

Robb: Its nutrition, o-lifting and occasionally something about stretching your blood letting so it seems fun. Great resource there. Particularly I think for gym owners or coaches it's just a great condensation of information variety of topics but again definitely particularly in the last couple years much heavier kind of Olympic lifting straight orientation.

Evolve foods, go to [evolvefoods.com](http://evolvefoods.com) grab some chow, lots of goodies there, grass fed organic beef jerky, all kinds of crazy stuff. We have some soy free organic chocolates that we're now selling. One's 100% cocoa, the other one's 70% cocoa. I think 100% is if you were to take a spoon of Peruvian marshmallow powder and throw it down. It's actually kind of speedy stuff.

**[0:05:07]**

Who else do we have? We have [frontdeskhq.com](http://frontdeskhq.com) if you run a service based business like a cross fit gym, yoga, Pilates and auto mechanic shop stuff would be great. You could book appointments do online billing, it is the bee's knees friends and that's all I've got with that.

Greg: I like bee's knees.

Robb: They're small but big lifts.

Greg: We ready?

Robb: One other thing, I tweeted a picture of the breakfast I had yesterday because that's the neurotic stuff that we do in this whole paleo land and it was a bacon avocado omelet which was amazing and then also a bowl of blueberry apple sauce and everybody was humping my knee for the recipe on that.

So you take two apples, dice them, throw them in a small sauce pan, cook them with a little bit of water with a lid on it, maybe 10 minutes, pull that out, throw it into a blender or if you have one of those magic bullet gigs which is what I use, throw it in there and then about half a cup of frozen blueberries and blend the whole thing to the consistency that you like

and that's actually the empty bowl that I'm looking at on my desk and what I've been having for breakfast.

It seems to do me pretty well coz I tend to go to jujitsu about 11 o'clock or noon. I have breakfast about 7 AM and I do something like an omelet and then the fruit and I've had really, really good energy when I go into jits so that's what I've been doing.

Greg: Very nice.

Robb: Anything new with you? You just got back.

Greg: Yeah that's pretty much it. So chipping away on these projects I've been almost mentioning so I'm hoping to be able to actually announce those pretty soon.

Robb: Crack them open man. Let that stuff out.

Greg: It's not ready.

Robb: Okay.

Greg: Its not quite there.

Robb: Rule: sell no wine before its time kinda gig?

Greg: Exactly.

Robb: It was like Ernest and Julio Gallo. Its cheap wine and they used to have – this is dating me but showing that I remember commercials from the 70's.

Greg: There you go. Let's do this.

Robb: Now everybody has tuned out so.

Greg: Jeff Hazar says 'hey Robb and Greg, I want to first thank you for all the goods you guys bring on a weekly basis. Keep up the awesome work. I wanted to hear a bit about insulin and how it affects your post-workout nutrition. In particular I have heard a bit lately about the insulinemic rating of particular foods. So if a food has a high insulinemic effect it would be good post-workout.

Also why do some people refer to insulin as a fat storage hormone. If it acts as a transporter of sugar into the cell, why would it be considered that cause fat storage? Just before we begin, a bit of better understanding of this seemingly complicated at least to me hormone. That was the audio only spit tank by the way. Thanks for everything. I'm looking forward to hopefully making the cut here and meeting you both one day. No homo, no stalker just respect.'

Robb: If you're gay, we're not worried. We're not afraid. We'll embrace all comers here.

Greg: Yeas.

Robb: So let's see here, what do we got to tackle? Yeah the literature seems to indicate that some sort of a post-workout insulin spike seems to enhance recovery. There are some chatter about it improving anabolic state getting nutrients back into the cells and stuff like that. I think there's probably something to that.

As to the fat storage hormone piece, if you have a high insulin state then you tend depending on the insulin sensitivity of the different tissues that you've got, you can tend to partition nutrients into the adipose tissue instead of the muscle tissue and so I think that's where we would say that insulin is kind of a fat storage hormone.

Although as we've gone along, I think we're a little bit more sophisticated in that even in the complete absence of the insulin like lipoprotein lipase which will allow you to bring nutrient specifically fat into adipocytes and this is without any of the action of insulin.

If your insulin levels are real high all the time or abnormally high, I think we could make a good argument that the body composition is gonna be less good than if we had more regulated insulin levels so that's just a piece of all that.

**[0:10:04]**

I honestly think that from the workout and recovery standpoint, I think the biggest effect of some sort of an insulin bowl of supposed workout is actually suppressing cortisol production.

So if we start getting into some pretty heavy duty training if the session is pretty long then we tend to see some elevated cortisol post-workout cortisol – the pregnenolone steal. We have a situation where normally the sub straight that when cortisol levels go up, we start wicking away the sub straight that could flow into estrogen, testosterone, other adrenal substrates and eventually we can end up with initially elevated cortisol.

And then at the end of an adrenal burnout kind of gig, super low cortisol which is bad because all of our androgens crash, typically our thyroid is kind hammered. And this is some of the stuff that we see in people who train too hard, train too hard without adequate carbs, don't have good periodization.

And so I think some of the boost that maybe had when we're considering performance improvements with a post-workout carb or insulin spike which could be mediated both by branch chain amino acids, simple proteins like weight protein and or the addition of some carbs in there, I think we're just seeing some suppressed cortisol activity and then that tends to mitigate some of the catabolic effects of cortisol.

Its kinda my sense on all that we do have a little bit of anabolic effect from insulin but in my opinion, the lion share of the benefit is actually coming from cortisol suppression and not as much – and just having sub straight available to start rebuilding. That was incredibly long, should've been a much more concise answer.

Greg: People love to listen to you talk Robb.

Robb: Its madness.

Greg: Okay, see, questions from episode 160 and 162. I'll view those ones because I don't remember those episodes. Gary says in episode 162 Robb...

Robb: Gary, the eye of the needle Gary. You must pass right through it.

Greg: Robb stated that a low carb diet could be detrimental to performance and intense workouts. This leads me to ask what his thought is on Dr. Jeff S. Volek and Dr. Steven D. Phinney. In particular I would like his opinion of their book The Art and Science of Low Carbohydrate Performance.

Additionally in episode 160 Robb talked about a friend of his who is a functional medicine doctor treating people with a five day cortisol reset. My wife's circadian rhythm problem is similar to what Robb talked about, slow lethargic in the AM and wide awake in the PM.

I would love for Robb to talk more about how we can treat this at home or maybe even get his friend on to talk more about this. Robb you don't have friends.

Robb: I buy them.

Greg: He's from Canada. You don't know him.

Robb: I sell them off with blueberry apple sauce until I have people to hang out with. The first question, actually this one was written before I did my thoughts on low carb on paleo piece so to some degree I think that if Gary has read that then it kinda answers the question.

I like the book Art and Science of Low Carbohydrate Performance. I've followed Volek and Phinney's work for years. I was lead into their work by following some of the work by Thomas Seyfried of Boston University. His colleague Veech, forget the first name, those folks were doing kind of ketogenic diet studies related to epilepsy, after sight brain tumors and then I kind of float into the later work that Volek and Phinney have done.

I think the art and science of low carb performance is really interesting. It kinda lays out how to use a ketogenic protocol for athletic endeavors although they do recommend this stuff super starch which is kind of a vitargo-like large molecular weight carbohydrate which is supposed to release slow into the system, not produce much of an insulin response.

And so the idea with this is that you can have somebody who would be mega fat adapted, ketogenic but then also be able to fly some glycogen into the muscles so that you would have that low grinding gear so that you could actually do sprint work.

**[0:15:05]**

There was a great paper from The Journal of Nutrition And Metabolism I think the title was something like ketogenic diets and athletic performance into a really solid paper. It's not that long but it details some of the early explorers who ended up interacting with the Inuit and started

eating ketogenic diets and there was some analysis of their physical performance.

What they found is people who switch to ketosis as their primary fuel source, you can have fine aerobic capacity. Aerobic capacity is equal to anything that you would typically see in a mixed diet, a carbohydrate diet kind of scenario but because of the lack of muscle glycogen you effectively have no low gear like you were not – sprint activity that is in that glycolytic pathway, just doesn't really exist because we don't really have that much glycogen.

Under ketogenic circumstances, typically the glycogen top off that we see is in the 60% to 70% realm and this is from gluconeogenic activity of converting the glycerol backbone of triglycerides into glucose converting gluconeogenic amino acids into glucose and trying to refill the muscle glycogen stores.

So it's just not that efficient and in my part two of my thoughts on low carb and paleo I kinda detailed my coaching experience and when and where I have and have not applied a ketogenic protocol for folks or just kind of low carb protocol.

Any type of athlete who's called upon to do any amount of work that is of longer than two seconds duration, you start requiring some carbs I think for a variety of reasons.

I'm seeing more and more the need for post-workout carbs for surprising cortisol release although segwaying into this question we just had, you could be in a largely ketogenic state, do a post-workout shake that has whey protein and say like coconut milk or something like that, then you can probably get some suppression of cortisol release because of the amino acids and the gluconeogenic effect of the amino acids post-workout.

But I'm just not seeing anybody come on any type of world scene, even a regional scene and just set the world on fire with their athletic performance using a ketogenic approach and its not to say you can't get mileage out of it.

Again in the piece that I wrote I said that I can definitely see an argument for a ketogenic or a low carb protocol being used in an aerobic base

building phase for an endurance athlete but that activity is gonna suck. They're not gonna feel good. But what they're trying to do is ramp up the lipolytic enzymes in their system so that they do metabolize fat more effectively.

Unfortunately I don't think anybody anywhere like biology has not figured out how to get the same power output out of glycogen. We can't get the same power output out of glycogen or out of fat that we can with glycogen. There's just no way to do it.

Biologists have a long time to tinker with this and we haven't been able to figure out how to do that and so I guess that's kinda my very, very long explanation on the book. Greg have you read that book or...

Greg: I have not. There was too many words for me.

Robb: It's best to avoid that.

Greg: Yeah.

Robb: So the deal with the functional medicine doc, this guy is actually getting out of the military pretty soon so we'll be able to talk to and about him much more here in the future. The basic idea with this is there's a variety of ways of tackling this circadian rhythm kind of goofiness as its related to cortisol depending on which stage of adrenal fatigue or adrenal alarm somebody is in.

In the early stages say you just had a baby, some natural disaster happens and you're kind of on high alert. Initially we're gonna find cortisol levels elevated, DHEA levels still normal so the sub straight that flows into cortisol is still normal.

Over the course of time though, pushing that whole system we start tanking on the DHEA. We have that pregnenolone steal and we start seeing decreased levels of androgens, decreased immune functions and then eventually we will see a situation in which cortisol is likely low in the AM and then may ramp up in the PM which is exactly the opposite of what we want.

**[0:20:00]**

Cortisol is a little bit situating. It releases glucose and out of a lever and allows us to access lipids for energy and it'd be nice to have that in the AM. We don't really want that in the PM when we're getting to wind down and go to bed and that's the big problem where people have this kind of tired and wired state or that's kind of the underlying physiological state that's going on.

And there's some different things that you can do to try addressing that. You can do some adrenal gland extract like porcine adrenal gland extract and use that in the morning. You can use some licorice in the morning because the licorice blunts the degradation of cortisol out of the system. You have to be really careful with that because licorice can elevate your blood pressure to the point that you basically die.

So somebody with hypertension can't use that, even somebody without hypertension react really vigorously to licorice so you definitely need to work with some sort of functional medicine doc to figure all that stuff out.

But those ideas are to elevate cortisol in the AM and then you can do some things like vitamin C which we're actually gonna talk about vitamin C in a little bit, phosphatidylserine which we're gonna talk about in a little bit. Those things can tend to suppress cortisol in the PM and then also holy basil, Greg, you've used holy basil a bit right?

Greg: I have indeed. I used it last night as a matter of fact.

Robb: Greg is like the toughest nut to crack on this wacky cortisol stuff that I think I've ever seen. And so there's a couple of different strategies where you're trying to elevate cortisol in the morning. You're trying to suppress cortisol in the evening and these things work to varying degrees and a lot of it is dependent on how much an individual is it or willing or able to modify the lifestyle factors that got them to this spot.

So another way I've learned about through this friend that this flip circadian rhythm can be addressed is actually the administration of reasonably high cortisol dose in the AM over a five day period. And so you do a pretty big dose in the AM of moderate like about a half of that dose around noon and what this does is it provides you a reasonably high cortisol level in the AM, actually a pretty high level cortisol in the AM.

So you should feel alert, you should have good energy, the brain should be fluttering on all cylinders but you've released a large enough dose exogenously that you then suppress endogenous cortisol production in the PM and so you do a big bolus in the morning. By the PM, all of that has cleared out of your system but then because it was a large bolus then your normal endogenous production is suppressed.

We've seen this with anabolic steroids where people will take a testosterone analogue and then it suppresses testosterone production all the way as far north as FSH, follicle stimulating hormone production. So it's an interesting approach.

I haven't seen it used on many people and it was relatively new on my radar but it made sense like you would do this thing for a week and then you would cut doses in half the second week and then you would titrate entirely off on the third week with the idea that we're straight bombing the adrenals kinda beating them into the submission for the evening.

You get better sleep, you're more rested and all of that stuff starts feeding into much better recovery because if you're never sleeping well then it's hard as hell to get the recovery that you need.

Greg: That is true. I can attest to that. Okay let's see if I can make it through this one. Amy says 'hey Robb and Greg, instep obligatory bowing down in I'm not worry mantra. Long story short you both rock.' Thanks Amy.

Robb: Thank you.

Greg: I have a question that's based in all the buzz about low carb as magical therapy for all kinds of metabolic and neurologic derangement versus higher carbs to support athletic performance or the things in already healthy lean people. We know that for certain people the APOE genotype effects lipid and cholesterol metabolism, isn't that likely that some aspects of genotype affect carb tolerance as well. What are your thoughts on this?

I understand that carb tolerance is intimately tied to insulin sensitivity and activity levels but I can't help thinking there's probably a geno/phenotype aspect to it too. Let's face it. We all know people who eat carbs out of the wazoo and whose only exercise is lifting the remote control yet they remain lean.

So I feel like carb tolerance in terms of body weight has to have something else to it than matching carb intake to activity levels. As for other aspects of health besides weight all bets are off. We know that being lean does not automatically mean someone's healthy.

**[0:25:00]**

I did my thesis on Alzheimer's as type 3 diabetes and the therapeutic role of carb restriction and the medical literature is pretty clear that Alzheimer's is the end result of decades of hyper insulinemia leaving to insulin resistance at the blood brain barrier and this subsequent starvation of brain cells and the absence of appreciable amount of ketones.

The research is also pretty slam dunk of APOE genotype E4. E4 raises Alzheimer's risk exponentially but only when combined with a high carb diet and or lifestyle factors that whack out insulin sensitivity. So it stands to reason that people with certain genotypes are more evolutionary suited to a higher carb intake and others are better suited lower.

This is nothing in support of either camp only that optimizing body comp and health would probably require knowing more about the food environments where individual ancestors lived. The problem with that is we're all such must at this point that almost nobody's pure blood at anything at this point. Thanks for reading my novel of a question. Sorry it was so long.

Robb:

It's a good question. What are the salient points here? So is genotype a really big factor in the whole insulin sensitivity gig? I would say without a doubt it certainly is. But with the caveat and folks should definitely check this talk out. I actually link to it in my part three of my thoughts on low carb and paleo and its Chris master John's talk from AHS 12 at Harvard.

What master John – he made this great point. He looked at the gene frequency of amylase in humans and chimpanzees. I'm not sure if he'd look at any other primates. It was really interesting. Chimps have almost no amylase gene activity. Even hunter gatherers have three or four times more amylase activity and then depending on where you are in the kind of genetic bread basket, certain people had just ridiculous numbers of these amylase gene repeats.

What the gene repeat does is it increases amylase activity. Amylase is critical for starch digestion and its interesting also, the people who had the highest amylase activity – when these people tend to have better management of insulin in response to high carbohydrate intake and so instead of producing too little insulin and getting a really high blood glucose level or too much insulin and ending up in a hypo glycemic state, these people with the high amylase gene frequency tend to see much better controlled blood glucose levels and not as much problems heading into hyper insulinism at least just from the carbohydrate side.

Without a doubt we have some different genetics that are a factor here but the thing that gets interesting, we also know that the gut endobiome, the bacteria that we carry in which there's more genetic material in the gut bacteria than in our entire body so you can kinda make the argument from just the genetic stand point that we're more bacteria related or oriented than we are homo sapiens genetics oriented.

But all that aside, we know that changing the gut biome can dramatically influence insulin sensitivity due to inflammatory processes when systemic sepsis occurs when bacterial end toxins make their way into the body, we immediately end up in an insulin resistant state that indistinguishable from widely uncontrolled type 2 diabetes if the dose of LPS, the endotoxins that come off bacteria's is sufficient.

It can be life treating and interestingly in a life threatening septicemia scenario, the administration of insulin is actually very therapeutic and anti inflammatory and I wrote a piece on that looking at net form and insulin resistance.

So that's a piece of the puzzle. I think even though we've got our genetic component we need to think about genetics and we also know that the mother's hormonal environment influences the fetuses, the hormonal and kind of epigenetic story and so we don't need to change genes entirely to get different gene expression.

We can either turn them on or turn them off with greater or lesser frequency and then we can get all kinds of changes. You can completely change the way that a critter functions without changing its baseline genetics. You just need to change the way that things are turned on and off. Methylation activities kind of the main factor in that.

[0:30:00]

And so if we have a mom that is stressed out that is hyper insulinemic then appears to be even second and third generation down the line issues that we can see. They've seen this in I think it was people who survived the holocaust, women who were pregnant during World War II and they've traced mutation frequency on various genes that are related to the hyper cortisol, hyper hypercortisolism stress state.

And now three generations later we are still seeing that elevated stress response from this thing that happened more than 60 or 70 years ago now. So the epigenetics are really a big factor in all this stuff. And that's where looking at genetics is great, looking at different blood markers are great and all that stuff.

But still, this is where I kinda default to starting people a little bit on the lower carb side of things unless you're a really hard charging athlete and they don't really seem to show any signs or symptoms of hyper insulinemia but I kinda steer people onto that lower carb side of things 50-100 grams a day mainly from non-starchy high fiber low glycemic load sources and then we start ratcheting things up and just kinda playing with how they do because there's so many variables, so many moving parts.

It's easy to imagine somebody who has good theoretical genetic insulin sensitivity but their mother managed to get herself into some sort of hyper insulinemic state, was borderline type 2 diabetic, had gestational diabetes and then that kid, even though the genetics looked good, the epigenetics, the way that the genes are turned on and off could be completely fouled with regards to the potential of insulin sensitivity is.

So I think we're just miles and miles away from being able to pull some meaningful blood work that is going to just predicatively say this person can eat 600 grams of carbs a day and then they're gonna suffer no ill effects or this person can eat 60 and that's all that they can do. I think there's still mainly an empirical observational piece to this that's gonna tell us where folks need to be. Smokes man.

Greg: You're getting a workout.

Robb: Seriously. My jaws are tired.

Greg:

I like this one. I don't have to talk too much. Genetically preset body comp. Jack says 'hey guys my question has to do with what I'm calling a natural body composition. I've been eating a paleo diet for the last eight months. During that time, I felt better, have more energy and no longer spend a lot of time trying to lose weight. I'm a 5'10 male went from 210 to 188.

The thing is I have this last 10-15 pounds of body fat that just dot budge. I'm wondering if my body has reached what it thinks is ideal composition. I get between 50-100 grams of carbs daily from vegetables, some nuts, and occasional berries.

With effort I can get down to 180 by further restricting carbs and interment fasting but once I go back to eating regular intervals and carbs closer to 100 I jump back up to 188 to 190. One thing I enjoy about living this way is not focusing on calories and all the BS dieting and just the general wellness I feel and bacon.

Should I just expect that this is where my body wants to be? Not sure I'm interesting in the effort involved in counting carbs, interment fasting, all that would go is stay leaner. Also I lift 1-2 times per week and it's less fun when carbs are lower. I'm lazy. Have I reached a point of diminish and return?'

Robb:

Possibly yeah. This could maybe be an argument. So if you look at any – what I do on the book, any of the recommendations, I think I have blog post paleo diet am I losing enough weight because people always ask this question.

At some point I just get at the end of my tether with folks tracking their weight, I would rather you put a bow on it, figure out the person that you dislike the most in your life and give the scale to them so that it could be neurosis generating in their life and I like people to take photographs, front, side, back same setups, same clothes.

I like people to do hip-waist measurements. I like people to have some performance goals and I like some kind of gym based stuff like a back squat, a dead lift maximum pull ups, those sorts of things and some sort of a quasi-aerobic kind of gig like a 400 meter run, an 800 meter run, something like that. You pick some or maybe it could be a cross fit diagnostic workout whatever the thing is.

But I like a couple of performance based goals and then we start fueling to meet those goals and so if that means that you need to eat some more carbs, dial your fat down a little bit so that you can drive harder at your physical activity, that seems good to me and it seems different than what you've been doing and there's always that saying what gets you from A to B isn't necessarily what gets you from B to C and so it definitely sounds like it's time to check out some other approaches here as always the usual stuff.

**[0:35:16]**

Is your vitamin level adequate? Are you getting good sleep? All those sorts of things. If the sleep isn't good then fat loss is gonna be hard as heck to do. But I would ditch using the scale. I would do once a week photographs. I would get some accurate hip and waist measurements and pick some performance oriented goals and give yourself a two month, three month period to try to hit those and see what we do on the body compassion front.

This is one of the things Greg Glassman – I think when Eva was her we talked about a little bit, but he had a really good observation with this stuff which was somebody would say I wanna look good whatever and I wanna lose body fat and you made this point that if you can figure out how to have 20 dead hang pull ups, double body weight back squat, handstand pushup on the rings...

Forget what this stuff was but you pick some reasonably challenging physical goals and like a decent 800 meter time, everything's gonna be fine. You're gonna look good. You're gonna look jacked. Everything's gonna be good because you feed yourself probably to be able to meet these performance goals.

And I think that's a really valuable observation and something folks should spend more time chasing some performance and less time worrying about scale and also being willing to shift gears so you've been eating more on the low carb side for a while and got some decent results with it. And so I think it's time to give things a change.

If it doesn't work then at least you can take that one off your list. If you start just ballooning up from the carb intake then okay you're really carb sensitive but that would beg a question like do you need to get some

blood work done to see what your ferritin level is, your iron saturation where its crystal clear that high iron status can impair insulin sensitivity because the oxidative stress from this elevated iron and again Greg wrote an article on this in the performance menu back in like 2004.

It's not like this information is new but it's umm... Welbourn and I talked about this a little bit and its somewhat related to the exercise short attention span theater and people did the same thing with food and all the rest of that. Folks keep looking around trying to find the next thing like there's something dramatically new under the sun.

Obviously there's innovation that happens all the time but at the end of the day it's more about consistency and having a plan that you stick to than some sort of magic parameter. We know that people have different levels of carb tolerance. We know that can change based on activity level and body comp and we know that low carb at some point for athletes can start becoming problematic for some people and so we need to potentially shift gears.

I know that was all over the place but that's what we got.

Greg: No, we talked about this a few episodes ago too about people being genetically pre-disposed to being somewhat chubby, being somewhat lean, being super jacked and muscular and I really think – this is not based in science at all but merely experience and reason that there is certainly a huge genetic component to how you can ultimately look.

I guess the easiest analogy I can think of is if we put Richard Simmons on the perfect diet with the perfect training, could he ever look like Schwarzenegger and my answer would be no I don't think he would ever...

Robb: Yeah, no amount of growth hormone or testosterone.

Greg: Yeah its just not gonna happen. The only reason for that is obviously there's something genetically about him that would prevent that kind of body composition so it's not that you have to throw in the towel completely on your goals. It's just that you've got to look at them within the context of what you've got to work with.

And the last one I would add to that is make sure when you're doing your evaluations you're comparing yourself to yourself. If you try to evaluate your worth as a human being by comparing yourself to elite athletes especially to their body composition, you're going to be in for a really long miserable life because not only are these guys the cream of the crop genetically speaking and I know this is bursting a lot of people's bubbles. Most of them are on drugs of some kind so you gotta just relax.

**[0:40:00]**

Someone posted on our Twitter it was like lance Armstrong proved you can use steroids and still be healthy. No, what he proved is how naïve the general public is about PED's. That's what proves is people were actually surprised about that? Get the fuck out of here. Unbelievable.

Well let's move on to phosphatidylserine or as Robb here so cleverly put it, phosphatidylserenity. I love it. Okay 'hello Roberto and Gregor. On a recent podcast, Robb mentioned phosphatidylserine. I've been curious about this stuff for a while. According to the repository of all human knowledge, Wikipedia phosphatidylserine used to be distilled from the brains of bovines but is now distilled from the brains of soy bean.' Those are near the breast from where the soy bean milk comes from.

Robb: Indeed.

Greg: 'I'm firmly in the camp that believes soy is bad. Bad soy, go to your room without dinner. What I would like to know is can something distilled from soy be good for us? I also can't believe that anything used in mass production would generally be made from organic soy so is GMO soy a secondary issue.

Or is this like scotch which although it is made from crane is rendered gluten free by the distillation process. While I'm perfectly willing to be a guinea pig to satisfy my scotch needs, I'm not so sure I wanna go down that road for phosphatidylserine. Thanks in advance and if the world happens to end, I'll look for you and Valhalla for an answer.'

Robb: Hopefully they have meet their...

Greg: Can non-Vikings go to Valhalla?

Robb: I don't know.

Greg: I kinda thought that was more of an exclusive heaven for large brain of hair warriors with axes.

Robb: I am half Swedish so I am hoping that would fly me in under the radar but I don't know. But if I do die, make sure that Nicky burns me on a boat and all that stuff.

Greg: We'll send you out into Lake Tahoe.

Robb: There you go. All the environmentalists are like 'no'. So the phosphatidylserine deal, so soy is a major – I think it is the source of all these phospholipids like phosphatidylserine, phosphatidylcholine, phosphatidylinositol like there's a long list of these things. All of them have some really interesting and beneficial physiological activity.

Choline is really, really important for liver function. People who have poor carbohydrate tones, people who do not metabolize protein well, if they supplement with choline which eggs are actually another great source of choline and also lecithin and all this stuff. What these things do is they act like soap. They tend to allow the mixing of lipid and aqueous media type stuff and that's why they're kinda cool. That's why you see lecithin in chocolate typically helps all the watery and non-watery parts to mix together better.

And so I talked to Mat Lalonde about this and maybe it'd be good to revisit this but for me this stuff is similar to actually the single molts scotch deal. I think that's a pretty good analogy here. I'm not that freaked out about the soy content of things like phosphatidylserine even though Evolve Foods is selling soy free chocolate, I'm not honestly that freaked out about soy lecithin in my chocolate. God save me if I got something else wrong. I'm not that weirded out by it.

Somebody has a legit soy allergy, would they still be able to take these stuff, and is there enough protein elements to it where they would have a problem? I don't know. I did some poking around on that, I didn't really find anything conclusive. Some docs were saying that stuff like this would be fine, other docs said no so I'm not really sure but I do know that typically we use the phosphatidylserine as a therapeutic intervention for a specific issue like dealing with cortisol problems.

I guess people will tend to use it long term as kind of an ergogenic way to trying to suppress evening cortisol when they're training hard and stuff like that. But the amount that you're taking in, the kind of punctuated activity, I'm just not that weirded out by it.

But again I river my right to be wrong and to change my position on that down the road. The stuff that I was looking at when I look at the amount and I look at the actual composition of the stuff coming out, I'm just not that weirded out by it.

Greg: Cool, doesn't sound that weird to me. Okay, this subject line is not quite as clever as the one before, it is question for podcast.

**[0:45:00]**

Robb: I have question for podcast.

Greg: Michael George says what about supplementing vitamin C? It sounds like we came into this in a middle of a discussion.

Robb: I know, totally.

Greg: Is the synthetic ascorbic acid that supplements contain a problem? These people think it's a problem in the American Journal of Clinical Nutrition Vol. 87, No. 1 142-149 January of 2008 in case you wanna look it up. Which so supplementation with vitamin C ascorbic damages muscle, causes impairment and mitochondrial function, loss of endurance and inhibition of the body's own antioxidant enzymes, superoxide dismutase, I think he means, and glutathione peroxide. What do you think about supplementing vitamin C? Thanks.

I like how this paragraph started with a question. What about supplementing vitamin C? And then ended with that same question.

Robb: It's a book ended deal.

Greg: It brings you right back around in the heart of the matter.

Robb: Tell them what you're gonna tell them.

Greg: Although the second question does not have a question mark. Become a demand instead of a question.

Robb: Kinda pushy man. So this is something that when we look at the literature and when we look at supplementation with high dose B vitamins, vitamin C stuff like that, we just don't see great long term benefit for this stuff.

And actually when Chris Kresser and I were putting together the paleo logic stuff, we were rating around on this and this is why we tried to keep the doses in them more along food grade and why we recommend it for 2-3 months for most people with the adaptive boost which actually does have some methylated B vitamins in it, the digestive piece doesn't really have anything. It would be concerning in that way.

It's one of those things that know that free radicals oxidative damage are a significant player in potential cancer development and neuro degenerative diseases. They're part of the inflammatory response. So the idea was we'll just dose people with really high amounts of antioxidants and that will just fix that problem.

What it does is it suppresses the hormetic stress responses which actually allow us to adapt and so what a high dose vitamin C typically does and it totally makes sense. You're suppressing the endogenous production of superoxide dismutase's, glutathione peroxidase. We need a little stress to be able to mount these stress responses and that's actually beneficial for us.

If there was a time that I think that taking some vitamin C, it's purely anecdotal but I know when I'm traveling and I'm on horrible air containing airplane, I feel better if I'm taking some vitamin C in that situation. If I start getting kind of a scratchy throat and stuff like that.

I swear like if in an emergency – ascorbate deal with some calcium and magnesium ascorbates in it, a little bit of B vitamins, I'd shoot that stuff down I go to bed, I just feel better. I don't know if it's just...

Greg: I agree. I do the same thing. Whether I feel bad or not when I travel, I take that stuff.

Robb: Again I don't know if there's anything in literature, I don't know if it's purely psychosomatic but at this point I don't know – give two horses testicles like that. For me it really feels like it works and so I think that's where to some degree if you have a ritual that helps you look, feel and

perform better and we can't hang too much damning literature on it killing you then I don't think that's that big a deal.

And so I tend to use vitamin C in a very punctuated fashion I really have started avoiding taking it anywhere near exercise and actually any type of – trying to think of I do take some phosphatidylserine post-workout. It has a little bit of B6 in it, not very much. But because of this hormetic stress deal I've actually been kinda cognizant of not taking in some really heavy duty pharmaceutical great antioxidants or large doses B vitamins and stuff like that.

It's interesting though I think a little bit of coffee, a little bit green tea, these things have both antioxidants in them but they have pro-oxidative activity and so they work both in a free radical quenching but also a free radical producing manner that I think again is that push-pull yin-yang kind of gig that is beneficial for life.

**[0:50:04]**

And you know, another piece with vitamin C, if people are really habitual about vitamin C supplementation it enhances iron absorption out of food and so we've talked a bit about iron overload and stuff like that and so for males or post menopausal females thinking vitamin C with meals in my opinion could be further problematic if you're eating like red meat or spinach or some sort of reasonably high iron containing item.

Again if you consume some high phenolic containing item like dark chocolate, a little bit of espresso, a little bit of green tea, those phenolics tend to inhibit the absorption of iron so that's a way that you can mitigate that stuff a bit.

Greg: Well that sounds very complicated.

Robb: Yes. Coffee with meal, done.

Greg: You don't want to get so much iron that you have trouble getting through airport security. That would be a really uncomfortable put down.

Robb: You should probably be lobotomized before that.

Greg: TSA does that now?

Robb: They probably do. I'm stoked they are doing away with the naked bodies scanners even though I think it was 68 billion spent on those things and now they're scrapping them because they don't work that well and just the privacy concerns.

Greg: I'm sure somebody is buying up those disused units right now.

Robb: Seriously the porn industry is like...

Greg: Okay, Diane says good day. Well good day to you Diane.

Robb: Good day mate.

Greg: I was hoping you might be able to help me. I've been paleo approximately 2 ½ years. I recently got my blood work done. Everything came back in wonderful paleo fashion except my inflammatory numbers. My paleo leaning doctor recommended to increase my glutathione levels. He recommended that I take weigh. I'm not so much into taking weigh because it is not real food. Is there something else you can recommend to increase glutathione levels or is all the hype true and weigh really is the very best way.

Robb: It's interesting. I was talking to Chris Kresser about the stuff and historically I've been in the camp of recommending glutathione precursors or support and so things like milk the cell extract, silymarine extract, polyphenolic acid, selenium, good protein intake just as a baseline and that would be enough to get some good glutathione production.

I think in a lot of situations that is good to go but it's really interesting. The literature is crystal clear on this stuff. High quality weigh protein isolate, you shoot that down, a couple hours later your glutathione production is seriously ramped up.

So we were just talking about taking some exogenous free radical quenchers like vitamin C and stuff like that. There's some really interesting research looking mainly at fruit flies at this point but they ended up duplicating the SOD, the superoxide dismutase's gene in this fruit flies so that they had better free radical scavenging and the flies live 2 or 3 or 4 times longer.

I don't know if this is going to apply to humans. In my part three of thoughts on low carb and paleo, I talked about genetic reaction norms and how certain animals if they're under stress, biology will push off senescence and aging and the hopes that critter will reproduce and this is all based on the amount of energy that goes into creating offspring.

Humans even though that I would argue that creating off spring is an incredibly energy intensive activity, apparently relative to the other critters it not and so we aren't really expected to see the same type of life enhancing elements out of say caloric restriction but this enhancing glutathione production, enhancing SOD production is really interesting because it seems like if the body is naturally doing this stuff we don't see the suppression in the hormetic effect.

So we're not stopping free radical production before it starts like what we would see with mega dose vitamin C but we allow free radical production to occur in the net stuff, as soft up the superoxide dismutase or glutathione and glutathione's really important in detox pathways as well.

**[0:55:00]**

So it's interesting and like if you are legitimately registering with elevated systemic inflammatory markers like CRP or something like that, as long as you don't have a serious dairy problem I could see a really strong argument for using a high quality weight protein isolate to help deal with oxidative stress and help get that stuff dealt with.

And then I would circle back around and try to figure out okay do we have some gut dysbiosis. Is there some problem with sleep, is vitamin D level low? I would wanna know okay you've been eating some sort of paleo-type gig for 2 ½ years why do we still have some systemic inflammatory issues and we should be able to get that buttoned up and who knows, maybe you'd end up with better blood work by doing one weight protein isolate shake a day or like taking some weight protein isolate and throwing it in some apple sauce or something like that. I don't know whatever the administration vehicle is.

This is where I think it's important to use all the tools that we have at our disposal and I think this kind of evolutionary biology perspective that kind of pains the paleolesque way is kinda favorable. I think that's legit but

then when we have some blood work that we can look at and we have some technology like a weight protein isolate that clearly can improve oxidative stress parameters then I think would be silly to not use those.

Unlike the vitamin C I think the weight protein isolate is supporting normal antioxidants, anti inflammatory status as opposed to suppressing that stuff with the case of a high dose vitamin C.

Greg: Alright.

Robb: Dude one for you.

Greg: That rabbit hole was deep.

Robb: Yeah.

Greg: Okay I'm just going to apologize in advance for the language and what have you in this one. It's not my fault. I'm quoting. Jake says 'hi guys. I have a question regarding weight lifting that I'm sure Greg would be interested in. Chinese weight lifters such as the great Lu Xiaojun seem to supplement their Olympic lifts with body builder type training so using compound exercises but hitting a higher rep range.

I was wondering if you can explain how this might be beneficial. I have recently started to learn o-lifting from Greg's awesomely written book which I recommend to EVERYBODY. Get it. Before starting to learn lifts I was strength training weight in at 75 kilos I can lift three times my body weight on a dead lift.

Bench can suck my dick butt lifts and pull ups weighted I found extremely effective. I'm now on confused state. I want to do the o-lifts and do it well but I also love my dead lifts. What rep range is best to supplement o-lifts? 1-5 or 10-15? I wanna look awesome as well. There's just too much choice in the life. Thanks in advance for your answers or rants. You will go on this question. Please ignore my spelling mistake. I never went to school. I spent my life in the gym.'

Robb: It sounds like the Lu Xiaojun wrote this.

Greg: Yeah I got a few thoughts on this. First of all there's nothing wrong with doing a little bit of body building stuff in addition to your weight lifting

deal. I think we also talked about that a couple podcasts ago and probably a few more before that and a few more before that.

Something you really have got to understand about the elite weight lifters of the world is that this is what they do for a living. They literally do nothing but train and then eat and rest and restore to support more training. They are also supplementing quite effectively let's say.

So you can't say I wanna look super jacked and be good at the Olympic lift so I'm just gonna do what the Chinese national team does. You won't be able to handle it. I can tell you that right now. I read a quote from one of the Chinese coaches a couple years ago that said something like – someone asked him why you guys do so much body building stuff.

He said oh well Asians tend to not carry as much muscle as the Europeans so we have to do extra work which to me is horse shit because those guys are just as jacked if not more than a lot of European lifters. I don't think it's because they do a few more exercises.

In any case, let's see, there's a couple questions in here. How might this be beneficial? Well it's beneficial because obviously a priority to you is looking good so if that is a priority, you've got to train for it. You just have to find that proper balance that appropriately matches your priorities so which one is more important to you? Looking good or snatching and clean and jerking a lot of weight. Based on that you can decide how much time and effort you're gonna put in to training for each one of these things.

That being said create the base out of the Olympic lifts regardless of what your priority is and then tack on the additional work in the appropriate volume, intensity and frequency.

**[1:00:00]**

Dead lift 1-5 reps or 10-15 I don't think a dead lift is probably gonna be a great body comp exercise and if you're doing sets of 10-15 you're just gonna smoke yourself. Your lower back is gonna be a constant state of fudged-upness so that's probably not gonna be a great idea.

I would say if you want to deadlift and you're dying to do it, do it once a week at the most. Do whatever you feel like, make sure it fits somewhat

with the rest of the cycle you're doing so it doesn't completely disrupt that but you're probably talking more in that 1-3 or 1-5 rep range.

In terms of actual body building exercise selection I don't know – I can't tell you exactly what the Chinese do. No one can tell you that except for the guys who are in those gyms every single day with them. But various reports I've heard from people who have gone over there and visited and videos I've seen of this and that, they do pretty much very exercise under the sun and moon. Literally they just do everything.

Again, that's their job. They can do that. So they're not just doing compound exercises. They're doing machine leg extension sometimes. They're doing stuff like that. So you've got to experiment and find what exercises work best for you, what rep or volume range works best? I feel like we talked about this just an episode or two ago but get a bunch of variety with those accessory more body building type exercises.

Generally I'd say you're probably gonna get better results from a little bit higher volume, higher rep range some more in that 8-15 range. And get the dumbbells and cattle bells out. Do all your chin ups in rows and what have you and again you just need to prioritize and then build your program around that. What do you say about that Robb?

Robb:

I dig it. Greg and I were talking and it's when we came to visit your place and so historically I've been on the really low volume high intensity thing when I've been making recommendations for folks doing like MMA and jujitsu and stuff like that.

And they're still the caveat in there that if you wanna be good to your sport just like what Greg was talking about with the Olympic lifts, if you really just wanna be a good Olympic lifter, probably a ton of extra body building stuff isn't gonna be that great. But if you wanna be a solid o-lifter and look a little bit jacked then doing some bench and a bunch of chins and maybe some curls and triceps extensions isn't gonna be the end of the world. You have big traps and big guns. It's not the end of the world.

But I've been noticing it's really interesting. I feel like I had been in this 1-3 rep, 1-5 rep range on my lifting for years, two years, and three years. I just never cracked out of that because I felt like my recovery was gonna be impacted if I did too much volume and if I went to jujitsu I would get smashed which I get smashed no matter what but its interesting.

What I did, I was actually reading some stuff from the dude that is doing the cube training and it's kind of a west side barbell kind of hybrid deal, and it'd be interesting to get him on, but his observation was that with a standard west side barbell type stuff you do a max effort upper body max effort lower body and then some speed work and then maybe some repetition work each week thrown into that stuff.

What he found was that the demands, even the psychological demands of needing to max multiple times consistently he was just kinda getting blown out of the water with it. So what he started doing, he would do – he actually broke it up because it was a power lifting deal squat dead lift bench and then accessory work around that.

But one week you would do a max effort on one of the lifts and then you would do a speed day, say it'd be max effort bench, speed dead lift with accessories, repetition efforts with squat and accessories. And then you wouldn't do a max press again for four weeks.

So each week you do one kind of max effort gig and what he's doing is a ton of body building type work and it's not like it's easy. It's still high volume hard work type stuff but he wasn't feeling as psychologically beat down and the dude's just been like setting the power lifting world on fire. I totally forget his name but cube method is what the deal was.

I started thinking about that and I lightened up my way a ton on stuff like press and chins and started shooting more for volume so I would start off with trying to shoot for 4 sets of 8 on week one, 5 sets of 8 week two, 6 sets of 8 week three, fourth week is unload week and then I would start things over and try to ratchet the weight up a little more after each one of these cycles.

**[1:05:15]**

And long and behold I feel like I'm getting stronger, actually enjoy doing the training and I'm putting some muscle mass on and the body composition is pretty good I think just due to the volume. It hasn't thus far really impacted my jujitsu. I'm still making good progress. I get smoked down there but I'm not feeling its horribly impacting my recovery and I tend to stick to a couple of basic movements in the whole thing. I'm not doing a ton of extra volume.

If I tend to go to jujitsu Tuesday and Thursday and so Wednesday I just thumb roll and do mobility. I don't do anything on Wednesday. Otherwise Thursday is just a disaster. And if I'm feeling a little bit run down, if I'm kinda tired, I'm feeling a little bit scratchy throat or something like that then I dwell things back. I need to finally sack up and use Joel Jamieson's HRV deal and start tracking things that way.

But it's interesting. The long and short of all this stuff is I started doing stuff that looks way more like body building type rep schemes and I'm getting stronger and I feel better and I'm actually having some fun with the whole thing and I have no doubt I will end up... Say if I ramped up to five days a week of jits instead of 3-4 I have a feeling I would maybe do one full body day a week of strength work and that would be it and that's an interesting thing.

If you check out Marcello Garcia and he has some stuff online. He talks about his training. He doesn't do any peripheral strength and conditioning work at all. All he does is roll. This guy destroys people. I just saw some videos yesterday of him rolling with Andrei Arlovski and it looked like a hobbit rolling with an ogre.

He is so tiny compared to Arlovski and he just climbs that guy like a tree and Arlovski I think has a black belt in jujitsu and he's like 100 pounds heavier than this guy and Marcello was just all over him but Marcello will do a ton of lower intensity rolling to get technique and then he showed how he gets in shape for a tournament and the mulling that he gave this guy was crazy.

He was moving so fast so intensely. In my opinion, the best – he's probably the best grappler in the world in the Brazilian jujitsu scene. He just doesn't do any peripheral strength and conditioning and he doesn't really feel he needs it.

Could you make an argument one time a week a set of low volume dead lifts, some low volume chins and some rotator cuff work would be beneficial for them. I think I could make an argument for that but it would literally be 20 minutes out of his week and we might get a little bit more power and all that stuff out of him.

But as it is, the dude is motoring along 100% on technique which is really the end I'll be on in combative and I know that I've completely gone a

field on this. I think it's just worth re-evaluating any of this stuff and trying to figure out what your goals are and different methods to use.

Greg: Yeah. I agree. I agree with whatever it was you were saying that whole time.

Robb: Yeah, totally it's good that you phase that out. Greg, back in the muscle beach days, didn't the guys typically – they were like Monday, Wednesday, Friday kind of o-lift type stuff and then Tuesday, Thursday more body building, hand balancing and all that sort of stuff? This guy's had some pretty amazing physiques, pretty legit performance.

Greg: I honestly don't know but I know that back then, a lot of those guys did incorporate a lot more athletic type exercises rather than the more purist appearance body building sort of slant that you see today.

Robb: Right.

Greg: Yeah, I don't know. The only one of those guys I've ever met is – oh my god my brain just dropped out of my butt hole right now.

Robb: Frank Zane?

Greg: No. The blonde bomber man Dave Draper.

Robb: Dave Draper yeah.

Greg: And we didn't really talk a whole a lot about that stuff so...

Robb: Cool. Well we managed to run that one over anyway even though we were supposed to wrap up on this question so...

Greg: It's cool.

Robb: Anything else that folks need to know?

**[1:10:00]**

Greg: Let's see here. I don't think so. I'll say that look forward to the 100<sup>th</sup> issue of The Performance Menu because not only is it gonna be an incredible issue but we're gonna be launching something new and cool and exciting so we'll let you more know about that when it comes in May.

Robb: You'll probably see some sloppy piece of work from my part in that one too.

Greg: Hopefully or I'll just write it for you and sign your email and not get approval first.

Robb: That works. That's fine by me. It'll probably be better punctuated if we do that.

Greg: Everybody has to eat low carb. You're not allowed to eat carbs.

Robb: I've changed my mind again. I like the zone.

Greg: Okay. On that note, let's get out of here before I say anything worse.

Robb: Totally. Good call. Alright we'll talk to you soon.

Greg: Okay, see you.

Robb: Later G.

**[1:11:13] End of Audio**