
## SHOW TRANSCRIPT

**Danny Lennon:** Hello and welcome. My name is Danny Lennon and you are listening to Sigma Nutrition Radio. This is the show that is all about getting you the information you need in your pursuit of manipulating body composition, achieving phenomenal performance or becoming a truly elite-level evidence-based coach. Whatever your motivation here you can acquire some in valuable tools from world class experts in nutrition, sports science and health. As they break down the latest science and explain how they apply it. Imaging getting access to learn directly from the likes of Eric Helms, Mike Israetel, Spencer Nadolsky, Dan Pardi and many other active researchers, doctors and coaches. Well here you'll find exactly that. Countless hours of insightful lessons for free. make sure you subscribe to the show on iTunes or Stitcher and you can find me on Twitter with the handle @NutritionDanny or you can head on over to the site sigmanutrition.com

We are here at episode 65 and today I'm going to be talking with the one and only Lyle McDonald. Lyle has been one of my very favorite fitness and nutrition writers for many, many years now and without question one of the smartest people I have came across discussing nutrition and fitness topics. I'm going to link to all of his work in the show notes for you guys and you can catch that sigmanutrition.com/episode65. That's sigmanutrition.com/episode 65 and if you prefer getting your information in text format you can also get a full transcript to the whole of today's

show over at that link as well which you can download for absolutely free.

So let's get down to it and get Lyle on the line. Hey Lyle welcome to the show. How are you doing today?

**Lyle McDonald:** I'm well Danny, thank you.

**Danny Lennon:** It's great to have you on because as someone who has heavily influenced my own work and someone I've been reading for several years now I'm absolutely excited to have you on the show today. And really, because of the breadth of your work, there's an endless number of topics that we could have got into today but I'm going to try and keep it fairly narrow and focused. But first, for those listeners who perhaps who have been living under a rock when it comes to fitness over the last 10 years, can you perhaps give them the brief cliff notes version to who Lyle McDonald is and what your work is all about?

**Lyle McDonald:** Sure. I got into this field; it was actually in high school. I sort of came from a very sedentary video game playing background then got into sports and actually gymnastics of all things. That led me to UCLA where I pursued a degree in exercise physiology while I was there. This was late 80s early 90s I got involved in inline speed skating which was sort of a growing sport. I just got very interested in the science of performance and fat loss that has always been an interest for me because I was a chubby little kid and like most I wanted to be better than I was and I think my own desire to fix myself sort of drove a lot of what I was studying. After I graduated the internet was just starting and I got involved with that and got involved with Dan Duchanie's BodyOpus diet in the late 90s and that sort of led me deeper to nutrition, into my first book which was called the Ketogenic Diet, which was about carbohydrate diets and it just kind of went from there.

I've always been really interested, well not always but since I got into this you know fat loss as a primary interest, athletic performance, supplementation, diet, nutrition, you know and everything that was kind of related and was certainly a big interest of mine. And I tried to avoid specializing. I really wanted to keep track of all of it because I'm sure we'll get into this later; I find that a lot of areas of research and also practice they tend to ignore what everyone else is doing. So the diet people like diet and the exercise people look to exercise and the psychologists like psychology and nobody is really paying attention to what's going on and as you well know it's all involved.

There is a training component, a diet component, and for a lot of people there is a huge psychological adherence component which is really the big issue. So that's kind of the short version. Over the years I've written I'm going to say 9 or 10 books, a couple little booklets, a couple of longer books kind of touching on different topics of interest. So that's kind of the basics.

**Danny Lennon:** Yeah, perfect and for those listening I will have all the stuff linked up in the show notes and I definitely recommend going and checking it out but I'd love to start this kind of conversation by diving into this whole area of the adaptations that go on or arise when someone is dieting, because you're one of the small minority of folks that I think who is not talking absolute crap on this issue at the moment. So we have anecdotally, this not so insignificant number of people who are reporting that they can't seem to drop any more fat despite the combination of severe calorie restriction and doing a lot of training. And this generally tends to be folks who are already relatively lean by normal standards. And now we're seeing this big noise in the industry of people telling them exactly what's going on but a lot of it is kind of BS to be honest. So I'd love for you to jump in: What's your thoughts on why we're hearing these anecdotal reports right now and what do you think is really going on?

**Lyle McDonald:** Okay, well first just to back up as I don't know how much background your listeners have. We've known for years that when you diet things slow down. When people hit plateaus fat loss slows down and we knew that metabolism was adapting and hunger goes up and there's all these things that are going on and finally in the 90's sort of the reason for all this came to the forefront with the discovery of leptin and that was really big, big puzzle piece for me. And basically when you diet, which to your body is essentially starving to death slowly, it creates these adaptations basically the metabolic rate goes down, the number of calories you burn during activities goes down people tend to be less active, so they get less of what is called spontaneous physical activity. There is all these other changes to appetite; hunger tends to go up, hormones just go off the rails and since it's your body trying to keep you from starving to death. Which makes a lot of sense and it all tends to be driver or controlled sort of essentially by these hormones called leptin which come from your fat cells, goes to your brain, tells you what's going on. So that's kind of the basic picture and we knew that this happened.

Now at the extremes what you're describing is sort of this idea that people that are still on low calories, still training hard are getting zero fat loss which would suggest that this adaptation which can vary in size

depending on the person you know is somehow completely eliminating that deficit. So suddenly they are no longer creating an energy deficit.

Now in the early studies which are mostly done on men and I'll come back to this. You know there could be absolute magnitude of that change was about it was about 40%. Right, so there is a potential drop from starting point of 40%. Now about 25% of that is just due to a loss of body weight. Smaller bodies burn less calories and there is really nothing you can do about it. But there is also this very adaptive component leptin thyroid nervous system activity all change and that's about 15%. But you know when they've seen this at the extremes is when people hit the limits of body fat. It doesn't really stop them from losing body fat. They get to 4% and that's it. It's this huge adaptation but they still got there.

So now there is this claim like you said the people who were supposedly still dieting and still on high amounts of activity, it's just nothing has happened and I think there is a few things going on. There do seem to differences between men's and women's bodies. The theory is that women's bodies adapt harder to dieting because you know they were more important for survival of the human race and certainly that is one issue. Most of these studies are done in men and there could be a gender difference. I have seen actually two case studies which are both obese individuals that their bodies showed such a quick adaptation that it cancelled out the deficit. They actually dropped calories by 500, their metabolism went down by 500 with zero fat loss but these were in obese people and there is a lot going on there.

What I tend to think is going on and I've seen this happen with a lot of women...well not just women; hard training, hard dieting dieters can retain a lot of water and women already know this. Women can shift five, ten pounds of water weight across the menstrual cycle and you know if you've got a woman whose deficit is predicting a pound fat loss per week. If she's holding ten pounds of water you're not going to see anything happen for ten weeks and it will like the diet is completely failing. So I think that's a big part of it and also there is a personality type that I will describe politely as being a little bit tightly wound and they already tend to produce a lot of stress hormones. Like you can always tell who they are on the internet forums because everything is in all caps and with a lot of exclamation points to the effect of NOT LOSING WEIGHT!!!! WHAT DO I DO? And you can like just see the tension in their typing and they are already overproducing cortisol. They are drawn to huge calorie deficits, they are drawn to hours of cardio and cortisol goes through the roof, water retention goes up enormously and very many of these people need

to just chill out. They will wake up 5 pounds lighter. So I think that's a big part of it.

I think another part of it is misreporting food. I'm not going to say under reporting but let's just say that when you get a small dieter who's on 1200 calories a day, number one it's easy to screw up the deficit. When you're on low calories it doesn't take much. You give them the peanut butter with your tablespoon and you over pack it just a little bit it's really, really, really easy to overcome that deficit. There is also a tendency in lean individuals to try to represent their diet as being better than it is and I think you're not frequently hearing about the mis-estimated food, the uncounted food, the night time binges that are occurring that people don't want to talk about because it seems like people that are really addressing this "metabolic damage" issue as they're calling it, what you hear is that the female hard dieter who stalled went from eating supposedly 1200 unmeasured calories per day to 1250 measured calories per day and somehow that magic 50 calories breaks the metabolic damage. And I would suspect that it's the measuring versus the non-measuring that tends to be the case. So hey I think yes there is a metabolic adaptation and I want to make a point: Because of the fact that this metabolic damage concept doesn't seem to have a lot of backing, I've seen people go to the other extreme; "Oh there is no metabolic adaptation; we don't need to worry about it". Okay, that's not true. There is no doubt there's a super slowing of metabolic rate as you get leaner. That is unarguable and the data on that is immense. It's just whether or not it's large enough to completely offset a female on 1200 calories and two hours of cardio and I don't think that's the case.

I think it's just water retention, little bit of this mis-recording. Again, there are actually 2 case studies in 50 years where the deficit truly prevented fat lost and that was in people who are already clinically obese. So I think in my gut until I see something and supposedly there are some people who are going to be measuring this directly and I look forward to that data. Until I see that, I'm going to suspect that it's just severe water retention, little bit of mis-estimation of calories on top of the metabolic adaptation. By the time a woman's only got a couple hundred calorie deficit. If she's overeating a little bit on her food and she's holding ten pounds of water your just not going to see anything happen for 8 to 10 weeks and my usual advice to these women is that they need to get drunk or get stoned and get laid because that will seriously relax them and they'll wake up lighter.

**Danny Lenny:** Yeah, awesome. I think there are a few things that I want to pull back to because I think they're really important points. The first thing is around

the metabolic rate and, like you're saying, for anyone to say that there are no metabolic adaptations doesn't make any sense because like for any dieting phase it's expected that the metabolic rate will go down. I mean by nature when you start dieting your basal metabolic rate drops, you're probably using less calories during a training session, you have less food overall (so thermic effect of feeding probably drops).

So it also makes common sense but then the second thing that kind of tied into, you mentioned around right at the start: leptin. So leptin is probably going to have some sort of impact there as well, which I really want to dig into in more detail later on in the show. But before that when we're talking about cortisol, just to lay this out for people; we're saying that because of the stressful situation of dieting, then put on extra cardio on top of it and then you're already worrying about weight, all these things coming together to keep cortisol super high and then that is going to be causing this water retention. And I think that's great. So just one thing that hit me as you said that was, since we're talking about a situation whereby cortisol levels are chronically elevated, does that raise the possibility that there could be an onset of cortisol resistance? And the only reason I'm asking is because I've seen some bits of research that have seen a link between cortisol resistance and then other hormonal resistances. So like insulin and adrenaline and leptin resistance; when there seems to be one there tends to be others. Could that be something at play when we're talking about these physiological or metabolic adaptations? That it's the cortisol that's kicking something else off?

**Lyle McDonald:** Absolutely and actually that reminds me of something that I usually mention and just forgot about is that chronically elevated cortisol actually causes leptin resistance in the brain. So in sort of a double whammy when your cortisol goes up and up and up, the normal signal that will be sent by leptin which we'll talk about later, in the first place isn't sent as well so that's kind of a dud. And it's also going to affect insulin, all these hormones affect everything and what you find in your cortisol is one of those mis-understood hormones and people think of it as bad, which is not true. Without cortisol you tend to have a lot of problems. The issue is pulses of cortisol that occur, you know acute intermittent stress, are very adaptive. They stimulate fat mobilization, help with memory, and all this other stuff. It's when cortisol is elevated chronically in a typical stressed modern Westerner. But like you said you get someone a little bit intense to begin with, they cut calories really hard which is a stress and do tons and tons and tons of activity which is another stress and you're seeing these super chronically elevated cortisol levels which are what are causing, to your point, probably insulin resistance and certainly leptin resistance.

Sort of the trivia aspect of cortisol and water retention is the cortisol actually cross-reacts with the aldosterone receptor and aldosterone is one of the hormones that make you retain water. The effect of cortisol is that it can actually kind of bind to that receptor and even though it does so with one-one-hundredth of the effectivenes, there is like 10,000 times more cortisol than aldosterone. So it has this enormous effect on water retention. Now if you look at people with Cushing's (disease) that overproduce cortisol they retain 10, 15, I mean just enormous amounts of water. So I think it's really doing the same thing and it's funny; part of the problem is some people have these physiologies that are just naturally optimised. There tends to be the really successful physique competitors. Like, they can just get away with anything. They do 2 hours a day cardio, they do low calories, they never have a problem and people who don't have those optimized metabolisms try to copy that and it doesn't work for them. Either because, again they are already pre-stressed or their bodies react differently.

Women's water retention is all over the map. Some women have no change among the menstrual cycle. Some women puff up like a sponge, there is a huge individual differences and I think that's also impacting on this. Some people can get away with 1200 calories and 2 hours of cardio no problem and there is this population that is just drawn to it psychologically and shouldn't do it. They need moderation and variably if you get them on moderate calories or moderate their activity or whatever it is, these problems seem to go away. The thing is you can't get them to ever do it.

I've seen this so often where they're like: "nothing I'm doing is working" and I'll say "well maybe you should eat a little bit more and do less cardio". "No, that can't possibly work!" What? Is it going to have less than zero results? But there is another part of their personality profile that they just won't consider changing. So when they stall on low calories and cardio what do they do? Cut calories, more workouts, more cardio which is exactly the opposite of what they should NOT be doing.

**Danny Lennon:** Yeah and then that kinds of ties in with where you often see people that might go away on a short vacation, a quick break away and come back leaner and feeling great but then just jumped straight back into the old routine. So that was a great thing and I wanted to highlight for people what we've got; while water retention and then simply misreporting are likely huge contributors to this, it also certainly seems plausible that we've got some degree of a true physiological adaptation going on. So then for example I think the big one that I would like to zero in on, you already mentioned: leptin. And I think that's kind of the prime candidate

for something that's going to experience a drop in circulating levels when someone starts dieting. But if that's the case, then presumably could any drop in that we see due to diet, just going to mean it's going to be easily reversible by returning calories to a higher level? As in, is that lowered leptin simply a transient adaptation as opposed to anything permanent or any kind of major permanent damage?

**Lyle McDonald:** Okay, the answer is yes and no. So years ago, people and researchers thought fat cells were this just inert ugly storage space and then about '94 they realized that they were wrong. There's been this theory that there was some signal that was kind of telling the brain what to do and in animal studies if you overfeed animals it raises their metabolic rate and eat less and vice versa but they couldn't figure out what it was and then they discovered leptin which is made in the fat cells. And this has kicked off 20 years of research into the now dozens or maybe hundreds of compounds that fat cells release. They go all over the body and do all kinds of things. The leptin was really one of the key ones. Leptin in the body is related to two things: number one is related to how much body fat you have and number two is related to how much you are eating.

So it sort of sends the brain this dual signal which is how many calories you're eating and then how much body fat you have. So what you see is in the short term, 3 to 7 days or so, Leptin will respond predominantly to food intake and they're predominately carbohydrate intake. So if you cut your calories by 50% in a week, leptin will be cut in half. Now clearly you've not lost 50% of your body fat which would be awesome. You've probably lost almost none but leptin has already crashed to an enormous degree. And then after that you see this gradual decline over the next three to four weeks based on fat loss. So there is kind of a short-term effect and a long term effect and you see the exact same going in the other direction. So if you overeat, and overeating from the standpoint of "normal" is different than overeating when you've been dieting, leptin does different things. But when you start raising calories leptin comes back just as quickly and responds to increased calories and then start going out more slowly and responds to body fat.

So there is this really cool study that I just found and again back in the early days before, when they were all just figuring this out, and they took women and they dieted them hard for four weeks. It was a pretty big deficit and they was an obese women and they lost a bunch of fat. And then before they started raising their calories little bit day by day over the fifth week and what happened was that leptin started going back up but the fat loss continued. So there was this temporary disassociation between what the changes in leptin and the changes in body fat because

of this increase in food intake. So we get back to the original question which you asked; you know, is the drop in leptin transient or permanent? And the answer is yes and no. The drop due to body fat loss is irreversible. The only way to get it back up is to get fat again which of course is what a lot of dieters do. However you will see significantly higher leptin levels at maintenance calories. Even if you just come back to maintenance versus being actively on a diet. So just to put some arbitrary numbers to it, say your leptin levels are fifteen 'whatevers', just to pick a number. At the end of week one of dieting it will be down to about seven and a half. After less than four weeks it might go even lower than that, two or three. If you come back to maintenance calories, it will probably come back to about six or seven, right. It will double or whatever the number is. It's never going to get back to that 15 though because unless you regain body fat and that's really part of the problem because, getting back this metabolic adaptation thing, although this drop is really big when people are dieting there appears to be this damn near permanent decrease even when people are at maintenance where again part of it is just losing body weight.

If you've lost 50 pounds of weight you will burn less calories and there is nothing you can do about it because you are of less weight. Maybe you wear a weight vest or something but there was also this additional decrease below what was expected right. So let's say you go from 250 pounds 180 pounds and your new maintenance should be 2000 calories or whatever it is. When they measure it it's about 1900, right it's a little bit less than what you would expected it to be. So there's still this permanent slight decrease when you're even back to maintenance calories. The thing is it's very small, it's about 5% below predicted which is where those numbers came. So again, if you predicted 2000 you might be a hundred less than that. That 5% is really not significant. You can offset that with 20 minutes on the treadmill or ten minutes of hard activity. Like you know it used to be thought that this was what caused people to get fat but it's really not that the big of a difference.

Might be different in very lean physique competitors but with the average dieting individual that permanent metabolic adaptation is not very big and probably the big issue is that people are just hungry and they are more into eating tasty foods. But there is a slight permanent metabolic adaptation and it's not "damage". And I know that's the word that's been thrown around. Well I guess it is in that it's permanent but it's just a normal adaptation to dieting, it's your body trying to keep you from starving to death and to get you back to where it wants you to be.

**Danny Lennon:** Yeah, perfect. So essentially for a given weight loss we would predict a 10% drop in this given case, like we've talked about. But what we actually see is something like a 15% drop. So that extra 5% is down to things like leptin or T3 etc. etc.

**Lyle McDonald**: Exactly. Which again, unless you regain all the body fat willl stay basically depressed. There is a case study of a body builder floating around and they followed him for six months of his contest diet and during he went from 14% body fat to about 4%. And everything just craters when you're a natural. Testosterone's at castration levels, thyroid drops, cortisol is through the roof, his metabolic rate was depressed about 40% by the end of it. By the time he got back to the same starting body fat percentage, back at 14%, everything was back to normal and everything had reversed itself completely.

**Danny Lennon:** Yes so just as you mentioned Lyle because those adaptations account for so relatively little in the grand scheme of things it's not going to be able to completely wipe out fat loss.

**Lyle McDonald:** Well again we're talking about two different things. We're talking about during active dieting the adaptation is much larger where it can be 15% or whatever which is when you get back to maintenance, yeah that may cause you to gain a little bit of weight if you don't adjust your calories? Sure but it is 100 calories a day, like it's just not an enormous amount and these women or these dieters that are claiming that not only are they not losing fat but they are regaining fat on low calories, lots of cardio. There is no, I mean physiologically it just doesn't work that way. You only get yes their metabolic rate and their calorie expenditure is down but unless they're back in a surplus they're not regaining fat. Either that or they're regaining weight or water or they're just eating more.

A part of the problem, and I get into this argument with people who are like: "the energy balance equation is wrong and the numbers don't work as predicted and 3500 calories and all that's nonsense". The problem is they don't realize that the equation is changing, is that the energy-out side of that; BMR, thermic affect of food, thernic affect of activity, spontaneous physical activity, all change in response to environment, diet, a whole number of things.

So their logic is "well if maintenance is 3000 and I eat 2500, that's 500 a day, 3500 a week, I should lose a pound of fat a week right?" But it doesn't work out that way for a whole bunch of reasons not the least of which is that yeah after two weeks the original 3000 maintenance is probably 2800 or whatever the numbers are. Your predicted 500 calorie

deficit is no longer 500 calories. The energy balance equation is perfectly fine, the numbers on the outside have changed and that's when people tend to go really wrong and in their interpretations.

So same thing here; you got a woman who might be thinking "ah you know, 1200 was my diet level." Right, well if your metabolic rate has gone down I got bad news: You either have to reduce food intake further or do more activity on top of all the water weight and all these other stuff. People had these plateaus and go "but I'm still eating the same amount". Right, your metabolism has adapted so now you have to reduce food or you have to recreate a deficit because it's been wiped out.

**Danny Lennon:** Yeah and I think you just raised a great point that so many people skip over; is that calories-in will always affect calories-out in that equation, so once you change one you have to change the other. It's not like this, "I'll change this side and then be able to predict what happens" and just people get lost in that completely.

**Lyle McDonald:** Well you know the simplest example I can give right is thermic effect of food which is the number of calories we burn just in response to eating, is about 10% of our total caloric intake. So on 3000 calories a day you burn about 300 calories. If you reduce to 2500 calories a day, the magic 500 calorie day deficit, automatically your thermic affect of food drops by 50 calories. Your effective deficit has already gone to 450, just by reducing your food intake. So right away the 500 calorie number is wrong because the energy-out side of it has changed and you see the same thing going up.

A lot of people will look at these studies that overfeed X number of calories and then look at fat gain and the fat gain that occurs is not what's predicted or there is a huge variance. There is a classic study where they took a bunch of people and over fed them by a thousand calories a day for 10 or 12 weeks or something which sounds like an awesome study to be a part of but anyway then they looked at it in the end and like some people gained a ton of fat and some people gained like a kilo. They gained like 2 pounds, way less than predicted but what they found is that the people that gained the least fat drastically increased what they were calling non exercise activity thermogenesis or NEAT. Basically they just moved around more and the calories-in was exactly what it was but the calories out went drastically up which offsets the surplus.

So I saw people using that study going "see, see they were all over fed the same amount and they didn't gain the same amount of fat". It's like

right, because the energy-out equation changes and it changes different for different individuals. Some people get a much bigger increase in metabolic rate when they over eat and some people don't and the same way coming down there is a huge individual variance in how much metabolism drops on a diet. One study in obese individuals found that after about two weeks some people had seen about a 100 calorie a day drop but some folks it was like 250. Some people's bodies hate them more. So if you put all those people on the exact same 500 calorie a day deficit, by week 2 one person is at 400 calories but one person is down at 150 or 250 whatever the numbers work out at. That second person will lose fat much more slowly not because the energy balance equation is wrong because their energy-out side dropped more.

**Danny Lennon:** Yeah, perfect.

**Lyle McDonald:** Even more depressingly, because there's a huge genetic issue, it's got to do with leptin, insulin sensitivity, thyroid levels, it's all this different stuff. And what they've found is that actually the people that raised metabolism the most with over-feeding, decreased it the least with dieting and vice versa. The people that have the smallest increase with over-feeding had the biggest drop with dieting which makes sense within the hormonal things. So basically some people are gifted, some people they over eat and they don't get fat and when they diet it's a cake walk because their metabolism doesn't shut down. The people that easily get fat when they over eat have the hardest time losing fat because their body shut down harder.



**Danny Lennon:** Yeah, it's just a double whammy from both sides again...

**Lyle McDonald:** Exactly. That's even on top of the changes that hunger and appetite and all that stuff but that's a whole separate conversation.

**Danny Lennon:** Yeah, totally. That's some great stuff there and I wanted to again talk about when we were discussing leptin, that there is two ways to increase it: So unless someone wants to put back on body fat which obviously is not a great strategy, the only other way to get those leptin levels back up after dieting is to bring in more food. So the question that comes around and this is part of what ties into one of the ideas behind re-feeds, is: how acutely does that happen? So in other words, does simply raising calories over a short period of time give enough of an increase in leptin to make it worth anything in the grand scheme of things of a diet outside of the psychological benefits of a refeed, just purely physiological?

**Lyle McDonald:** Correct. And that's actually a really good question. And 10 years ago I probably would have given you a slightly different answer because the research wasn't as developed and pretty much I think I was wrong. There is sort of two issues here. the first is that, yes, leptin itself responds very, very quickly. Like one, even a day of high-carbohydrate eating will raise leptin levels. The question is; will the brain "notice"? I hate to use that word because it, basically will signal be sent to the brain that says "okay food is available again, reverse some of these adaptations so that you can raise your metabolism" and all these other stuff.

And way back in the day I was a little bit more enthusiastic about short refeeds, although the first time I wrote about them, I even said not 100% sure that this is having a big-time effect and I'm now way more convinced that short refeeds and by short I mean five hours to one day, probably aren't doing much. There is an acute increase in energy expenditure but it's just carbs raising energy expenditure directly but as far as the central and leptin adaptations and I base it on this fact, even with total starvation despite the claims that missing a meal puts you in fat storage mode which is BS.

Even with total starvation, metabolism doesn't start to change till about day 4. Right, you don't actually see a decrease until about that, so there is a delay. Right the human body just doesn't respond to either meal to meal or even day-to-day changes. Even when they've looked at food intake right if I over-feed you on a Monday, you might not see a change in your food intake for like two or three days. So there is kind of a delayed response going on which makes sense right? Humans have long lived one day without food is no big deal. Right, for a rat or a mouse it's way different. A mouse lives two years, a meal for a mouse is an enormous part of their life. Right, a day for a mouse is an enormous part of their life. Like one day for a mouse is like two weeks for a human. Like if you scale it up, it's about that right. So that gave all of the early studies on meal frequency and all that stuff it came from was animal models but it doesn't work that way. So in humans it takes about four days for metabolism to adjust downwards.

I suspect that it works the other, that it was the same going the other direction right. So in the evolutionary logic it's kind of the same. Even if there is no food for a day, not a big deal. There is no food for two days, by the time there is no food for four days its probably time for your body to start responding. There may be a problem but by the same token, if you've been starving and suddenly you have food there doesn't make any logical sense for your body to go aha we've got food now, let's reverse it. Like I suspect it takes a longer time period and I actually took advantage

of this in my Ultimate Diet 2.0 book. I was like: okay, I kept the dieting phase to 4 days. Just long enough to get some good fat loss but really without slowing the metabolic rate and then I put it in like a two and a half-, three-day refeed to sort of reverse leptin and reverse the adaptations to some degree. Right you're never going to prevent the body fat loss issue but at least by cycling calories you're doing that. So my gut says that short refeeds like five hours to a day are great for psychology, they refill muscle glycogen, they let you eat some food that you would like to eat, they help the person get carbs which helps with training intensity. I doubt it's really reversing any of the long term adaptations. I think that takes at least three days.

I've been long suggesting people take a two-week diet break between blocks of dieting and there is no doubt two weeks will have an effect to sort reverse that stuff and bring the body back to some degree of balance so that the next dieting phase could be more effective. But I really don't think short periods...my enthusiasm over them 10 years ago was a little bit misplaced.

**Danny Lennon:** Yeah, I actually just as you mentioned the short-term diet breaks, I think that such a great idea especially from being able to say to someone "hey for the next couple weeks let's just see if you can actually hold on to the weight you've lost" because when you think about just how many people rebound after dieting, like just insane numbers. For someone to just be able hold onto that weight-loss that should be seen as a success. Whereas a lot of people would just think of it as a plateau right?

**Lyle McDonald:** Correct and there's also a couple of other things which is that one and lean dieters tend to forget what's right. If you're a lean physique athlete just look at 15 weeks of dieting. Number one you're already mildly psychotic or you wouldn't be a physique athlete but number two you can survive that right, but if you got someone who's 300 pounds and he wants to lose 100 pounds. You're looking at a year or more of dieting. Right, now if I told you for the next year you're going to have to feel deprived, it's just psychologically overwhelming right. No athlete trains all out, year-round. They take a week easy every fourth week, they take a couple weeks off every three, four months. Two weeks out of the year they do nothing yet we expect dieters to long term stay in this, what can be a fairly miserable experience if nothing else. I would like to put diet breaks and go "look I need 12 weeks" or whatever it is. It depends on how much fat the person is carrying like "look this diet is for 12 weeks and then we're going to stabilize. You can bring food up, you can eat more, you can quit a little bit of the stuff you didn't have but let's stabilize it at a new level". Like you said, psychologically they go

“okay I can do this. I can stay where I'm at or even gain a pound or whatever then let's do the next block.”

By breaking it up it just gives someone a light at the end of the tunnel. It just psychologically has these enormous benefits. I also found this is the paper I really base this on. They did this weird study a bunch of years ago and they were trying to find out why people rebound. Like what was going on physiologically or psychologically. So they get these dieters and diet them hard and said “okay we want you to take a two week break” and they expected them to go off the rails and gain the weight back and nobody did. They all kind of maintained their weight and they got right back on the diet and the researchers were like “well that failed”. Like it didn't work but what I think happened was it's an issue of control. We've seen people that are on a diet, they eat, they “break their diet", they get into this huge psychological “I've blown it, I suck, I'm no good, F it, diet's over” and they go off the rails.

Same thing, people have been dieting , life gets in the way. Holidays, vacation and they feel “I can't control it, I quit.” I suspected what happened in the rare diet break study was that the subjects want to make researchers happy, it's part of the psychology and they’re like “oh this two weeks, this is a part of the study, this is planned. I was told to do this, this is part of the plan now” and that way rather than diet controlling the dieter I think it puts the dieter in control of the diet. It's not a “I failed on my diet for two weeks cause I suck”, it's okay this is part of my plan to make my diet work effectively to stabilize and give me a greater chance of long term success and I think it refrains it in a way that makes it work a lot more effectively than just letting it happen and feeling bad because you feel you should have been able to stick to your diet on a cruise or whatever nonsense people put themselves through.

**Danny Lennon:** Yeah, totally agree. I think that's awesome and one other thing that I'll mention that you talked about refeeds and you mentioned especially high-carbohydrate refeeds seeing this increase in leptin. So is it that leptin increases are tied to carbohydrate over-feeding specifically or will we get that just from any calories?

**Lyle McDonald:** Mostly, it's mostly carbohydrate. Insulin is a big regulator of leptin production and they've done high fat and high-carbohydrate overfeeding and in the short term only carbs work and in the long term it kind of doesn't matter because you're getting fat again. The nutrients that seem to have the predominant effect on leptin, in general protein has a small effect, carbohydrates have the predominant effect and to nobody's surprise polyunsaturated fatty acids had a small effect and saturated

fatty acids none. But in that short term over-feeding it really needs to come from carbohydrates.

**Danny Lennon:** Okay, perfect. So you know with this leptin thing it's so interesting to me because it's tied to many things and I think even something like leptin because it is like a master regulator it's still going to have secondary knock-on effects. I've read a lot of of Stephen Guyenet who is kind of this obesity researcher big on leptin and there is even stuff on top of that now. We're still seeing links between obesity and damage to the hypothalamus itself. So because that's where leptin is primarily exerting its influence it's surely tied into that whole deal as well. So presumably, and I'm not too sure I'm just sort of guessing at this, we have leptin or leptin signalling is going to have some knock-on-effect for our brain chemistry and neurotransmitters. What sort of stuff that you have seen to go on there?

**Lyle McDonald:** Umm, everything! I mean it's actually it sounds hyperbolic but it's really not. In the early days of leptin they thought "oh this is an adaptation to starvation or an anti-obesity hormone which led one researcher to jokingly say that if this is an anti-obesity hormone it's got to go down as the least effective hormone ever. And they tried injecting leptin into obese individuals and it didn't work. And it turned out that the grand majority of them were leptin resistant, which means that the brain wasn't responding to it. You know they found a handful of people that don't produce leptin, they're all in this one this one family and when they inject them with leptin amazing things happened right. When you have zero and bring it back to normal amazing things happen, but leptin is having an effect on fat cells, on skeletal muscle directly but it's also sending that signal to the brain that is controlling thyroid stimulating hormone, luteinizing hormone and follicle stimulating hormone, so it's controlling sex hormone levels. It's involved actually in the stomach which is another big key to this. There is a hormone called ghrelin and ghrelin stimulates hunger. Leptin decreases ghrelin release from the stomach and so when leptin goes down, the stomach releases more ghrelin, which stimulates hunger so there's kind of this dual effect there.

Leptin has a profound effect on hunger and there is two different hunger systems which are the homeostatic system, which is really related to fullness, energy intake. In premise it should keep us from ever getting, becoming obese by making us not want to eat, by making us less hungry when we over-eat and it does that in lean individuals. Right, we always see these people that just kind of stay naturally lean and if they eat big for a couple days their appetite just shuts off. But in the obese because of the damage, because of the leptin resistance, whatever is going on, that

signal is not sent very well. But there is another system and this is what I think Guyenet had gotten into, which is we have this is, it's called the hedonic hunger system which is related to food reward. Right?

**Danny Lennon:** Yeah.

**Lyle McDonald:** Which I can describe simply as; we like eating food that tastes good and humans are not just these biological automatons, we're not a gut in the nervous system that just eats only good for energy. We eat because food tastes good and worse through dopamine, the opioids, the reward system which gets really complicated. And is it worth getting into but not only do all humans have these different systems but it's becoming clear that that the hedonic system predominates in lots of cases right. Clearly we live in an environment where there is lots of palatable, high fat, high sugar foods that are cheap, easily available and even in animal models that typically regulate body weight really well if you give them access to basically chocolate chip cookie dough they will eat themselves fat in a heartbeat and the homeostatic system completely fails and is overwhelmed by the hedonic system.

So not only can it be overwhelmed in general but there is evidence that like everything else some peoples systems work differently than others. So it's very likely that the obese not only are they starting with a more sensitive hedonic system right; They enjoy those foods more and I'm not saying this...it's not a criticism, it's not the gluttony argument, I'm saying that this is a biological underpinning that causing it. It's driving over eating, not saying that want to. And then that over-eating causes the system to get further desensitized to leptin...whether it's inflammation or something called endoplasmic reticulum stress. I don't think they quite figured out if the hypothalamus is permanently damaged or transiently damaged or starts a little bit not working as well. I tend to think that the system is wired to not, to promote over eating and the overeating causes the system to get worse. I think it's kind of that sort of cycle but as another interesting tidbit, when leptin drops on a diet so does dopamine levels in the brain. I wrote about it in this weird little book called Bromocriptine about fifteen years ago that nobody paid attention to but it was just too early for that kind of stuff. But when leptin goes down so does dopamine. And they've shown that starving animals for example are more likely to addict to drugs because of that but by the same token that drop in leptin makes tasty food taste even better.

It goes even deeper than that. They've also shown that the drop in leptin changes part of the brain that make us essentially more attuned and notice tasty foods better. We know when your dieting, suddenly not only

are you just hungrier and craving stuff, man you notice all of it. Like you're walking down the street and it's like cake, your brain is just like "here is food, there's food, there's food". So there is just this whole side of adaptations that are not only affecting the energy-out part of the equation but are attempting to affect the energy-in part of the equation to make you eat more.

Now this isn't biological determinism, this is not saying that...I've seen a lot of people going "this is why you can't lose weight and keep it off" which is taking this too far because clearly people do. There is no doubt the body is fighting on both sides of it. It's trying to make you eat more, it's trying to make you burn less and move less. Clearly through conscious choice we can control our food intake to a degree and we can control our activity to a degree. If metabolism is slowing well go walk an extra ten minutes or twenty minutes to burn that extra hundred calories. We can keep control but people differ in this degree and that gets them to those individual differences and unfortunately what you typically see is due to leptin resistance, hypothalamic inflammation. Whatever is going on, the people who need to lose weight and fat the most, are probably going to have the hardest time of it because they're starting out with a system that's maybe not working so well to begin with. They're getting bigger changes as they lose body fat. The people who have the easiest time are lean athletes and they don't need the help. It's sort of this inherent irony that usually the naturally leaner folks, they start with good leptin sensitivity, they don't have an over reactive hedonic system or they just have better food control because they've done it for ten years. Or just better habits in general and so the group that could most benefit from fixing this entire system is the group that tends to have a system that's not working as well in the first place.

**Danny Lennon:** Yeah, that's super interesting. You talked about lower leptin leads to then lower dopamine, so then possibly that is causing an increased drive to eat more for the body to try and increase its dopamine? It's like this feedback that's working on food reward...

**Lyle McDonald:** And that's on top of...there are other adaptations, there is one called neuropeptide YY and Pro-opiomelanocortin, agouti something something and there is all these changes in the brain that are kind of controlling hunger and leptin...there's other hormones...no mistake leptin is sort of the central hormone and one thing leptin actually does is it sets the brain activity to other hormones. Now, insulin sends the signal, ghrelin sends the signal from the gut and ghrelin stimulates hunger, CCK sends a signal, peptide YY, there's like a dozen and a half compounds released from the stomach that kind of go to the brain and tell it how

much you're eating, which nutrients you're eating, there is blood sugar, the stretching of the stomach sends a signal via the vagus nerve.

It all kind of comes into the brain. The leptin is just this central controller that not only has its own direct effect but is affecting how well these other hormones work, so just this enormously integrated system but to sort of show this is, as I mentioned they try to inject leptin into obese people, didn't really work because they were using it wrong. The idea was not to raise leptin. The idea should have been to prevent leptin from dropping and those are very different concepts. So there's been a couple of studies where they dieted people first, like they dieted into that 10% below their body weight, they saw a drop in thyroid, a drop in metabolic rate, increase in hunger, plateau on fat loss. And they injected leptin to take levels back just to pre-diet levels, just to take them back to normal like we talked about with the idea and here's what they saw, TSH went up, metabolic rate went up, hunger went down, they've shown that it decreases the attention to palatable foods and they started losing fat again.

So leptin is really, truly the central control but they also shown was a group of women, who frequently lose their menstrual cycle which is related to the drop in leptin as well but there is a group of women that have called amenorrhea, they lose their menstrual cycle not for diet reasons, it's usually because their kind of tightly wound. They kind of just stress themselves into losing their cycle and if you give those women long term leptin injections that reverses it. So like leptin, not that other signals aren't important but leptin really is this key central over-arching controlling signal that's either directly impacting on things or impacting on how well the other signals work.

**Danny Lennon:** Yea that's awesome and its interesting you mentioned the example of the athletes, the kind of one type of people who don't need the help have all kind of the advantages because when we're talking about leptin and you mentioned leptin resistance and kind of this cycle we get stuck into. I think one thing that I've seen to increase leptin sensitivity in the hypothalamus was I think it was 2006 study, I think by Flores' group. It was only done in rats mind you, but the physical activity that were at moderate to intense levels increased levels of interleukin-6, which again people think of as this inflammatory cytokine but that IL-6 had this anti-inflammatory effect in the brain & also seems to improve leptin sensitivity. So again this is this great effect for people who can do intense physical activity but that's not going to be most obese folks.

**Lyle McDonald:** Exactly. Also, there is the occasional weird study that will show that leptin levels are lower in regular exercisers, which the simplistic interpretation would be that's bad but, to your point, there's evidence that regular exercise increases leptin sensitivity and frequently you see that happen. If you increase insulin sensitivity, insulin levels typically go down but the signal is still the same and vice versa. So yeah exercise, there is also, I saw one paper I think it was in humans that sprint training, right this high intensity training, had a leptin-like effect in the brain and I think that's part of why people find high intensity activity kind of often blunts their hunger acutely.

But that only works if you've... Increasing leptin sensitivity in the obese would be fantastic right. They've been talking about it for ten solid years and so far very little has come out of that research whether it's a genetic effect. I mean dieting probably does it by reducing leptin levels but it has to be sustained. Regular exercise probably helps, fish oils long term have been shown to help and we know that fish oil does just about everything. But they've been looking for compounds to hopefully reverse this; If you can get leptin to send a better signal into the brain that may have an effect in terms of decreasing reward sensitivity, decreasing attention rewarding food, increasing hunger blunting from the new homeostatic system, it's just nothing other than kind of what we know works which is: reduce sugar, don't eat a lot of saturated fat, regular activity, fish oils, those all seem to be playing a role but yeah to your point the one group that needs to be able to do high intensity or a lot of exercise is generally the one that can't.

I've made this point on my website and people kind of...I've made the point that by large obese individuals can't burn a lot of calories during an activity and people are like "I don't understand". Like ,well even if they burn a lot per minute they generally don't have the tolerance for large amounts because it's hard. I'm like "try it, put on a 200 pound, 100 pound fat suit and you see how well you...how much you enjoy exercise". And really the only people that can initially burn a lot of calories with exercise are trained athletes and they don't need to. So it's really a horrible, horrible irony. I mean people can start at a low level and build up but that takes that sort of long term approach to it is if someone who's obese and wants to lose weight, yes start with what you can do. If you can walk for ten minutes today, do it. Three months from now you may be able to do forty five to sixty minutes of moderate intensity or whatever or you can think about intervals after a couple months once you've got a little bit of a fitness base. But initially they're just not able to do the kind of exercise in terms of volume intensity that would help and it's not good.

**Danny Lennon:** Yeah. One thing I'm just thinking and again this is just jumping back to those anecdotal reports we were talking about earlier and that it tends to be from female dieters predominantly that report this low calories high expenditure not losing body fat. Now, I used to think that this was simply down to their ability to go super low on the calories which usually isn't a problem for guys because they're kind of too worried about losing muscle mass. But now thinking about it, is it simply down to the difference in their approaches like that or could it be like a true hormonal difference? For example, with how they deal with leptin or leptin levels?

**Lyle McDonald:** I think it's actually both. I think a really good point is that male physique athletes, right they don't want to lose muscle so they usually don't go too nutty on low calories. A lot of female dieters tend to think that more is better and lower is better and they're on 800 kcal a day and 2 hours of cardio. And there definitely is some indication in women with leptin is a weird little thing is: even though leptin scales with body fat, women produce four times as much at any given level of body fat.

So if you had a male and female and both were at 15% body fat. I know that's a totally not realistic comparison. The woman will have about four times the leptin levels. Right, now that should be good and it's weird, like some stuff, like women burn more fat during certain types of exercise, during certain points of the month, which should be beneficial and yet we know they have a harder time losing fat which tells me there is something going on. Either their brains or maybe they have some degree of leptin resistance because of the higher levels. Maybe their levels drop or maybe their brains are responding differently to the change in leptin in them. Certainly there's some reason to believe that's the case and there is a lot of different stuff going on in women hormonally. Estrogen or progesterone dynamics are really weird but yeah I think those are both potential combinations.

So I'm willing, although I think most of it is probably under reporting and water retention, I'm certainly willing to agree that there is probably something different metabolically going on. Where that is exactly occurring is really hard to tell. A lot of studies just measure like the overall drop but when you start looking at it based on the metabolic rate, TEF, thermic effect of activity, spontaneous activity...like you tend to see differences in those. Some people for example, and this is another thing that gets the energy balance equation; Some people who've had a lot of exercise will move around less later in the day. So the body is making its adjustments to their energy expenditure and it's like "oh I burned 600 calories in exercise today. I should be losing X amount of fat". Right but your body made you move 200 calories less later in the day. So your

effective deficit is actually 400 and that seems to be related to volume intensity, older folks might do it more. I can't recall anything showing that women had a bigger effect but then again it won't surprise me that women are having a larger effect on metabolism and certainly most studies unfortunately look at male dieters especially lean male dieters.

There is some evidence that for women, Anne Loucks has done much of this work, that their hormones go whacky below a certain energy threshold. Like TSH goes down, their LH and FSH levels kind of change if they cross about 12 calories per pound. So there is this idea that women should never go below that. Well I have bad news: women won't lose fat effectively without going below that especially leaner women. There is just no getting around it. To lose fat effectively, some women have to go to ten calories a pound. I've seen people have to go to 8 calories a pound and it's just inactive, genetically un-blessed, like that is the reality of dieting for some people. Other people go on that "just increase activity". The thing is it doesn't work that way. All this leptin stuff, most of this hormonal stuff is responding to energy availability, which is energy intake versus energy output. So whether you create the deficit with food reduction, activity increase or a combination, the effects are more or less the same metabolically. There are differences in lean body mass partitioning and you may get to eat more food. I mean there's practical differences. But from a purely biological sense the body doesn't care. If you make a women reduce her body intake to 12 calories a pound or increase her activity so that's what the body sees, same thing happens. And the reality is women's hormones are going to get whacky, but even then some women will lose their menstrual cycle at small deficits and high body fat percentages and I've known women that dieted to contest lean and never lost their menstrual cycle. There is so much variability in women than there is in men. How their systems adapt, how these hormones affect things like water retention, appetite, all of this that women I think if buy and large are going to see more potential problems and unfortunately the studies just aren't looking at that extensively.

**Danny Lennon:** Yeah, exactly. It's certainly a mine-field and it's something we'll not get into right now but certainly super fascinating. We're just coming up on time here Lyle and before I get into the last couple of questions it might be a good time now to kind of let people know where they can find more of your stuff online that they can read through, what you've got going on at the moment and that sort of thing.

**Lyle McDonald:** Right, well pretty much I'm all over the internet. I was lucky enough to be there when it started so I still find articles as mine that I've forgotten about. My own personal website is either you can get there at

lylemcdonald.com which is just my name or bodyrecomposition.com and you'll get there. Just put in my name and you should find it. I do have a support forum, although I think forums are kind of dying in the Facebook age and then I've got a personal Facebook and then I do have a Facebook group which is called Body Recomposition that I tend to spend quite a bit of time on. So those are...my books are currently available only on my website. I may be getting on to Amazon at some later date but for right now for hard copies and ebooks and I'm just getting into kindle with epub type stuff for ebook readers but my website will pretty much be the best place to start or the facebook page.

**Danny Lennon:** Awesome and just as you mentioned the books, I was just wondering could you take a quick minute to tell who each of those are for because one common thing ,and I always have to laugh, is I'll get people who are just getting started on their nutrition or weight loss journey and they've told me they've purchased Rapid Fat Loss or UD2 and I've asked them "have you looked at A Guide to Flexible Dieting?" and they'll say no. It's like "that's the one you should be reading!"

**Lyle McDonald:** It's sort of unfortunate. I'm really awful with coming up with titles and honestly I've written I guess 9 or 10 books at this point. My first one was called The Ketogenic Diet and it was a very boring encyclopaedic tone on low-carbohydrate diets. I actually recommend other books first but when you want to know all the details that's the one. My Rapid Fat Loss handbook is sort of a very high protein, low calorie, low carbohydrate diet. It's sort of a modified protein-sparing, modified-fast and it induces really fast fat loss, which can be good or bad depending.

It's not for everybody, it's not a terribly fun diet but it does work. Ultimate Diet 2.0 is actually for lean dieters that want to get very lean. We talked about that a little bit. There is also the Stubborn Fat Solution which was aimed at men's lower abdominal fat, women's hip and thigh fat and that's also really for lean dieters. There is The Protein Book, which was again another very technical research driven book on protein for athletes and I've got sort of a related product which is I did this nutrition thing for mixed athletes. So like team sports, MMA, they have kind of their own special recommendations. The book that you mentioned that I do wish more people would read but the title is just not sexy is called the Guide to Flexible Dieting. Flexible dieting is sort of the big band wagon buzz word and "if it fits your macros" and everyone is on this band wagon and I would admit to being a little bit irritated.

I wrote this back in 2005. I wrote this book back then that basically said look being too extreme on your diet can hurt, and there is a ton of

research on this that rigid versus flexible dieting is worse, and people just think if I'm not a 100% perfect or all clean or all this then people just...it drives them crazy and they fail and so the whole point of this book was: being more flexible in your approach to dieting actually works better, which is very counter-intuitive in the appearance and work-ethic world dieters seem to live in. And I talked about body weight regulation as we knew about it at that point and sort of recommended "free meals" which are just single meals that kind of break the monotony of the diet mostly psychological. Talked about re-feeds, which we discussed in varying lengths and then talked about this full diet break. This 2 week period where you just kind of stabilize where you're at, to either break up dieting or go to maintenance or whatever. And it really is the book I wish more people would start with for exactly the same reasons you said because really when people are starting they just need to start. They don't need extreme diets generally, they don't need...get that just to cheat...I've gotten so many emails from people who did read it that are like "this book changed my entire psychological approach and I went from extreme dieting alternated with bingeing off the rails to realizing that hey I don't have to drive myself crazy with this masochistic food restriction to the extreme and not doing this I don't feel psychologically deprived, I don't have the cravings, I don't have the problems and I stick with my diet longer".

So that is actually the book I do wish more people would read but it's just not sexy enough. The title needs to be changed and that sort of leads into your next question. So it turned out that fairly recently and I won't name names, I was alerted that someone seems to have plagiarized that book and basically taken what I wrote and then claimed to have pioneered flexible dieting and I'm like okay and that made me angry. I mean I've been plagiarized before and that's fine but this one just particularly. So I decided that out of spite I was originally going to rewrite A Guide To Flexible Dieting and that actually led into this weird little book I published about a month ago. It's actually this drug solution in fat loss thing which we won't get into. It's just a project that I first started in 2008 and then gave up on but the long and the short of it is that through restarting this rewriting guide to flexible dieting I've sort of started a much larger project that I won't detail now because it's only half way through but pretty much I want it...one thing I've never done is written a book just about general fat loss right. I've written some specific diets, I've written some general information but I've never written...a lot of it is on my website but I've never really written a book that details just sort of general fat loss approach. So that's kind of what this is going to be and a lot of this information we talked about, a lot of this information that's appeared in other books in one form or another and some of it will be

stuff that nobody has ever seen before. So that's what I'm currently working on and it's coming along actually pretty quickly but it all started out of a spite-driven attempt to rewrite flexible dieting because it really does need to be updated. The research has changed. If it fits your macros, there is a whole different conversation. I've changed my attitude about refeeds a little bit so it's something that I do want to bring up to 2015. So that's kind of coming around.

**Danny Lennon:** Yeah, that sounds awesome and for everyone that's listening I will have a link to all that stuff Lyle just mentioned in the show notes. You'll be able to click through to all of that stuff and I definitely recommend doing so. So Lyle that brings us to the final question. I always end the show with and it doesn't have to do with nutrition or fitness but simply if you could advise people to do one thing each day that would improve their life in some aspect what would that be?

**Lyle McDonald:** Stay off of Facebook! Which is only half kidding about. I'm so the wrong person to ask stuff like this. I don't know, I think the problem is I don't know if there is a single thing. I guess if you want to talk what most people; "just pick something". I remember I read an article I think on some website and it was making the point that over time small changes add up to enormous results and if someone has that goal and I realize there is a contradiction between making small changes that are sustainable and seeing results quickly enough to be happy and that's kind of a contradiction that's in the way but it's in all behaviors. I think as adults we forget how long it took us to learn the alphabet, we forget how long because when we were young and time didn't mean anything. The fact that it took 3 years to learn a basic skill when you're five doesn't matter.

When you're thirty five or twenty eight or forty five the idea of taking a year to basically becoming competent in guitar or to reach your goals or to learn a new language, that's just completely foreign to us because time is of the essence and who wants to wait that long? And I think accepting that, realizing that not only is it going to take longer than you think but that very small incremental changes have profound long term results and re-conceptualizing it at least part of the approach to behavior change that way. Like, not saying there can't be larger changes but for a lot of people big changes equal big failures or I guess to be even more general, if there is one thing I would recommend people realize or do is if you keep doing the same thing and failing, do something else. And I think that's the one that kind of ties into weight loss. People go on extreme diets, they lose weight, they rebound and they do it again and again and again. Like I'm all for it, if it works fantastic, if intermittent fasting works

for you great but if intermittent fasting makes you binge, by the time you try it three to four times, move on it's not for you. Maybe for somebody else but it's not or you. If “if it fits your macros” makes you binge and go off the rails, quit doing it. People fall into this trap of like “this is the best approach for everyone” and that's not true. If you've done something three or four times and you failed at it try a different approach. If fast dieting doesn't work for you, try slow dieting. If slow dieting makes you get bored try it a little bit faster. God almighty if it's not working just do something different. So that's probably it.

**Danny Lennon:** Perfect. Awesome. Great answer and thank you for that. Lyle this has been absolutely amazing. Some great information, I hope people took a lot from it and I really want to say thanks much for your time it's truly appreciated and an awesome job. Thanks so much.

**Lyle McDonald:** Great, thank you Danny.

**Danny Lennon:** So that's a wrap for this week guys. Remember you can get a full text transcript of this episode for absolutely free over at http://sigmanutrition.com/episode65 If you are a new listener to the show and you've enjoyed the content you've listened to today then I urge you to subscribe to the show on iTunes or on Stitcher if you’re an android user so that you can keep up with the upcoming episodes. For all your regular listeners you guys already know how much I love and appreciate every single one of you, so thank you yet again for listening and I look forward to hearing your feedback for this one guys because leave it either on the comments section on the show notes page or maybe on Facebook. So I'm at facebook.com/dannylennonutrition or you can go over to Twitter and hit me up @NutritionDanny. So I will see you next time guys and thank you for listening.