

**EPISODE 243****[INTRODUCTION]**

**[00:00:10] AVH:** Hey everybody, welcome to the podcast. I'm your host Ashleigh VanHouten. This is Paleo Magazine Radio. It's officially December by the way, the last month of 2018 and I'm not sure how I feel about it. I do like the holiday season though because it's a reason for people to get together with friends and family, you may not see all the time. It's an excuse to pull out all those awesome paleo holiday recipes.

So you might want to check in on your subscription, your Paleo Magazine Subscription, maybe get one if you don't have one, it's a good treat yourself kind of gift. Check online, [paleomagazine.com](http://paleomagazine.com). We have a paleo version of every delicious thing you can imagine. Anyway, that's just an aside but it's also a good time to reflect and think back about all the fun, good things you did and learned and accomplished and saw and ate this year and maybe think about what your goals are for the next year.

Don't worry, I'm not going to start talking about new year's resolutions yet, it's too early, even in a world where stores start putting on Christmas music the day after Halloween but let's not even go down that road. All I'm saying is that a little reflection in your life, what you're grateful for anytime of the year. Thinking about what you're happy about and what you're excited about for the future I think is a great thing to do. It makes you happier and more appreciative and more present. That's just my two cents.

My guest on the podcast today is someone who's two cents is arguably worth a lot more than mine especially when it comes to health and fitness. His name is Dr. Mike T. Nelson and you may be familiar with him already because he has spoken on panels at Paleo f(x) for years as well as many other events and seminars and podcasts. He's been on basically every health and fitness podcast that's worth listening to.

I figured it was high time he came on Paleo Magazine Radio to chat about stuff like metabolic flexibility, the importance of non-exercise movement which I'm all about and how to maximize your training efficiency and a bunch more.

Dr. Mike is a metabolism and fitness expert who focuses on human performance and body composition. He has a PhD on Exercise Physiology, a BA in Natural Science and an MS in Biomechanics. He's pretty high level, he's coming out from all angles. He's also an Adjunct Professor and a member of the American College of Sports Medicine.

Despite all of this knowledge, he does a really good job of explaining the studies and the data and the information in a way that regular people like me can understand. Which is really valuable because it's great when people are smart and do the research and have the information but if they can't really communicate it to the rest of us, it's a bit of a problem. He does a really good job and I hope that you enjoy this interview.

If you do, you can give me an early Christmas present and leave a nice rating and review on iTunes. If you do this and you fill out the form that's in our show notes, you can just go to [paleomagazine.com/pmr](http://paleomagazine.com/pmr) and you will see your registration form, it goes directly to me and I may read your review out on a future podcast and send you free cookbook, so that's nice, right? Leave a review is one of the most valuable things you can do for the show, it help grow our visibility and to really pay it forward if you feel like you've learned something and you want other people to learn from the show too.

Thank you in advance for that and here is my interview with Dr. Mike after I tell you a little bit about our show sponsor, Bonafide Provisions.

[SPONSOR MESSAGE]

**[00:00:10] AVH:** Bonafide Provisions is a family owned company founded by a clinical nutritionist that makes real, certified organic bone broth the way our ancestors, and by that, I mean, grandparents, great-grandparents did it. It's been known for hundreds for hundreds of years, using only bones, no filler stock and slow simmering for 18 to 48 hours. They don't use high heat processing and zero preservatives to make it shelf stable. You're going to want to eat it fast after you thaw it but you will because it's delicious. They have chicken, beef or turkey flavors, they also have a frontier blend, my favorite which includes lamb and bison.

I use it as a sort of a comfort cup in the morning in addition to or instead of my coffee, it's a great replacement in the afternoon if you want something kind of warm and nourishing but without the caffeine to get all those amino acids and delicious vitamins and just yummy and savory, it's really good.

They've also launched a line of soups that combine bone broth and organic vegetables and they have flavors like butternut squash and chicken vegetable, Yeah, I mean I like bone broth but I don't make it that often because I guess sometimes I'm kind of lazy so it's nice to just have these frozen packs in the freezer, you take one out when you feel like it, heat it up super quick and it's the highest quality bone broth – you know, it's a high or higher than if you made it yourself so pretty easy.

They're giving our listeners a deal on any Bonafide products if you use the code, only bones at checkout. Go to [bonafideprovisions.com](http://bonafideprovisions.com) and order now.

[INTERVIEW]

**[0:05:07.8] AVH:** All right Dr. Mike, thank you for being here, welcome to the podcast.

**[0:05:10.9] MN:** Yeah, thank you so much for having me, I really appreciate it.

**[0:05:13.6] AVH:** I feel like I'm already pretty familiar with you just because you probably get this a lot but I've been to a lot of your talks and sessions at Paleo f(x) over the years and I've listened to a lot of your podcast and I always go to – it seems like I always go to the sessions that you're a part of at Paleo f(x) because they're always about building muscle or training and that's the kind of stuff that I'm in to. I have probably asked you some questions in the past but more anonymously so I'm kind of excited to do it in a more direct way today.

**[0:05:43.8] MN:** Yeah, awesome, thank you for coming to those in the past too, I appreciate it, it's always a good time there.

**[0:05:48.7] AVH:** Yeah, it's fun. I guess, you know, I think our listeners probably are pretty familiar with you and what you do but I'd love for you to kind of just quickly, maybe even just talk

a little bit about what you are researching or doing or what you kind of have going on right now that you're kind of excited about?

**[0:06:03.7] MN:** Yeah, right now it's a couple of things. I created the Flex Diet Certification and that's a way to try to look a little bit more on the nutrition recovery side for trainers and coaches or more advanced athletes, I just wanted to put that together in a system that larger gyms can use with their clients.

Took everything from how much protein to carbohydrates to fat, sleep, to meat and just some basic exercise micro nutrition and put that all in to a course which is just flexdiet.com and I'm pretty happy with how that turned out. Feedback's been good, it's been a lot of fun and even included some expert interviews in there from everybody like Steve Philips, Protein, Antonio, Dr. Hunter Wildman, Dan Party, Dr. Eric Helms. Lots of other people on that.

I'm a faculty member at the [inaudible] institute for functional neurology, I help them primarily more on the exercise physiology side. Myself, Dr. Canon [inaudible], Dr. Freddy Garcia, Dr. Joe Clark and Dr. [inaudible]. Put together a human performance course and we just had the first module on strength down in Florida, let's see, two weeks ago now as of this recording. Which went really well and it's a year long program but most of it is a flipped classroom.

Some people can take that online and then we kind of get together about once a quarter for three days. Run people through all the assessments, all the hands on testing. We put them together, we wanted a pretty advanced kind of a masters level, 300 credit hour course on everything strength and conditioning more human performance both on physiology and also the application side.

I'll be teaching nutrition module three on that and then still working with some clients online, some one off consulting and a few other more random projects and still teaching for Rocky Mountain University, next part I have for that is probably not for a few months yeah and [inaudible] University. Teaching online for both of them.

**[0:08:13.4] AVH:** Okay, you've got a couple of things going on.

**[0:08:14.9] MN:** Few things here and there.

**[0:08:16.8] AVH:** Yeah, I'm interested in for folks like you who have your hand in kind of so many different places. What is like a day in your work life or even like a week like? How much of it is divided between your traveling for seminars, you're actually working with individual clients, how much time do you get to research, how do you kind of break that down?

**[0:08:34.7] MN:** Yeah, that's a good question and probably depends on where I'm at. As of recording right now, we're in Oklahoma City, we're driving down to South Padre, Texas. Hopefully if all goes well, we'll get there tonight, just kind of hanging out for a while doing some kite boarding down there with some friends and so down there I'll be working in the morning till about one or two and then hopefully riding in the afternoon.

We are kind of gone most of the month and visiting some friends in Austin and Dallas, some kind of up through Oklahoma City again, visit some of my wife's relatives. When I'm at home, I usually try to divide Monday, Wednesday, Friday. I go down and work at our co-working place and then from when I get there at my little morning routine and getting up and doing my walk and some meditation and things of that nature.

My goal is to create some type of content from the time I get there, usually around 7:30, 8, until at least noon. I could be an article for my newsletter so usually send out about six days a week, could be an article for the site, could be an article for another site. Something on the certification, something on the human performance program. Some type of content that kind of moves one of those projects forward and then I usually leave there, I'll do some email from noon to one.

Ideally I'll leave there around one and then I'll train myself at home or sometimes in a commercial gym and then the rest of the day I'll do more emails, client follow-ups, online training and then on Tuesday and Thursday, if I'm at home, that will be more research continuing-ed, a lot more reading, podcasts and other phone calls that I have. I try to split those out on a different day if at all possible. I'm trying pretty hard not to do a lot of task switching.

Then Tuesday is about you know, five-ish hours with client follow ups for online and then during the week, it's a little bit less time with just general questions and things that come up during the week.

**[0:10:28.3] AVH:** Got it. With your clients, do you – you're still actively taking clients, what kind of clients do you get? Do you get the full range from sort of people who maybe don't know a lot about health and fitness and are trying to learn or is it more sort of based on the performance side and people who have an athletic background?

**[0:10:47.9] MN:** Yeah, right now, it's mostly other trainers or coaches and more higher level athletes. In the past, I worked kind of with more general population and a little bit wider background. Most of the ones I work with now have, I would say something going on that makes it not as simple as you know, hey, just follow this program and everything will be fine. You know, whether it's some metabolic issues they've got going on, whether it's a joint issue or something where they're in that very odd gray area.

It's not bad enough to see a physical therapist so they can't find one in their area but doesn't hurt all the time, you know? That bugs me a little bit when I do this type thing. I was just going to say, something kind of going on that we're kind of in the process of working around so that makes it – in more ways, it makes it a little bit more interesting but also a little bit more difficult because it feel like you're taking the most nonlinear route possible to get to where they need to go.

A lot of them other trainers which I enjoy because I'm like, if I can help educate them through doing their own coaching then they can take that and leverage that into their own clients and I'm really big on kind of learn by doing. If you want to learn a different approach on what to do with your clients, maybe let's see if that approach fits with your goals and I'll do all your programming nutrition, lifestyle, everything else which allows you to kind of outsource it to somebody else but also makes it educational at the same time.

If you have questions about why we're doing HRV or why are we doing this goofy breathing drills or you're poking on yourself, doing RPR or whatever, you can learn by doing on yourself and I think that's faster process too.

**[0:12:32.3] AVH:** Right, yeah. Okay. You mentioned a little earlier, NEAT and I wanted to talk about that because it's funny, I actually literally posted about this this morning and you can explain better what this is but basically in lay man's terms, right? It's daily movement that doesn't have to do with like the hour you're kicking your ass in the gym, right? It's just sort of like non-exercise movement, right?

**[0:12:56.8] MN:** Yeah, NEAT, technically stands for non-exercise activity thermogenesis. That sounds pretty complex. But it's just movement that's not categorized as exercise. I define exercise and there are definitions of this too that it's pretty formal, it's planned into your day, you know pretty much what you're going to do, you know the sets, you know the reps, it's tracked, you know, progress.

Where NEAT is - if I got up in the morning and went for a walk, I'd be considered NEAT. If I'm parking further away from the grocery store, walking around, that would be considered NEAT. Even things like twitching and fidgeting, those are all considered NEAT. How many calories you're burning by doing things that are not formally exercise for movement and for most people, they're probably kind of shocked to learn that NEAT burns more calories per day than formal exercise for most people.

If you're training to do an ultra-marathon or a triathlon or maybe CrossFit or some other things. Yeah, your exercise may actually be a little bit higher. But for most people, even if they're training three to four days, five days per week, neat will burn more calories overall in terms of their total daily expenditure than formal exercise. Which doesn't mean one's better than the other, they're just different.

And one thing that's fascinating on that too is a Levine did a study in male several years ago. Where they took people and on day one of the study for eight weeks, they overfed them by a thousand calories per day. Their hypothesis was okay, these people are just going to get fat, right? They're going to gain - I think they predicted around 14 pounds of fat during that time of the study and what they found was, some people did, although not as many as they thought and some people only gained like two pounds. They're like, wait a minute, what the hell is this? This makes no sense whatsoever.

They started looking at it and they realized that some people, when you over feed them, they spontaneously start moving around more and what's interesting is a good portion of NEAT is actually unconscious. Meaning people don't really realize that they're actually doing it. Other people, you over feed them, they don't move more at all, they just stay the same. They gain a lot more weight.

Because it's not regulating that calories out part of the equation. I thought was last thing on that study that is super fascinating is if you pull the actual hard data on it - these are people who are just kind of recreationally active, they're not a elite athletes, they told them, don't change your training, nothing. A good percentage of what they gained was actually lean body mass.

They didn't specify more protein or anything, it was just more calories. I thought that was super interesting because if you have athletes who are trying to gain more lean body mass, it's another data point that being in the caloric surplus is going to be a huge thing for that.

**[0:15:54.0] AVH:** Right, okay. I find this whole topic really fascinating. First of all, a thousand extra calories a day sounds like my idea of a perfect vacation and something that I would love to do. I talk about this NEAT thing a lot with – see, I do seem health coaching too and I talk about this a lot with my clients because it's not like as sexy as going to the gym and people think like you go to the gym, you work super hard for an hour and then your metabolism is working extra hours for hours afterwards and whatever.

You know, alternatively to what you're talking about, I've had days where I did a really hard workout and I literally don't move the rest of the day because I kicked my own ass and I don't think that that balances out. In fact, it probably makes it worse. However, I'm also one of the most fidgety people in the world naturally. I think that - I'm standing at my stand up desk right now and I'm kind of like moving around and no one wants to go to the movies with me because I'm constantly fidgeting.

I talked about it in this post today how for people who I guess want to improve body composition or maybe lose some body fat but also just be healthier, we have to think about this movement thing from a more holistic – all the time perspective rather than how much we can kill it in the



one hour that we're at the gym, think about the other 23 and what we're doing and it's things like you said, kind of parking a little bit further away or taking the stairs instead of taking the elevator.

I guess, one question that I have because you do work with athletes and sort of higher level who are very active is, is there a plateau sort of situation that happens? Because I feel like I know some people for example who maybe don't exercise a lot, they're not big movers. If you tell them like, try to get a half an hour walk in every day. They can lose like five pounds in a couple of weeks because they're upping this NEAT factor, right?

For someone like me, I'm not a high level athlete at all but I work out every day and I never stop fidgeting, I can't really go much further than what I'm doing already, right? I have to add an extra hour to my 45 minute walk every day. Is there a kind of plateau that hits, that that's not much more you can do in terms of the outside of the gym kind of movement?

**[0:18:00.9] MN:** Yeah, it's a really good question and it's very fascinating because the component that people tend to forget is exercise efficiency. Everyone like the calories in, calories out, while that's true equation is way more complicated than most people realized because they both regulate each other. If I eat more in general, probably like Levine's study going to burn more. However, there's a massive amount of variability from one person to the next.

People just assume that all these relationships are linear, right? If I walk, let's say, 5,000 steps a day and I'm weight neutral. If I walk 15,000 steps a day while just start losing fat like crazy. Yeah, it will probably definitely help for sure but at some point, your body's going to get more efficient to that movement also.

Again, that's not a bad thing. But what I see in some trainers is they take too much of a linear approach and they just keep adding more with disregard for what the person can actually do. In your case, right? If I came to you and said, "Okay, you want to lose some weight, this is simple man. Walk 7,000 more steps per day, right? If you do that five days per week, six days or seven days, you're going to lose weight because you're burning more calories."

In the one hand, that's true, but, you might be pretty maxed out on NEAT already. Adding more to your schedule might be very difficult to do, may not be the best return on everything that you could do if your steps are already high. I usually look at it and say okay, if you're seven to 8,000 steps per day, there's some good data to show that that's about what you need to kind of regulate the both ends of the spectrum pretty good, right? Your calories in and your calories out.

You start getting below that, humans just don't do well a bunch of stuff kind of goes awry and kind of decouples from everything else. Now, can you do more than that? Sure. You know, the old 10,000 per day which is kind of more of a made up number. In clients, I like them to get 7,000, 8,000, 10,000, you know, some that are trainers working on the floor all day, they may easily get 15,000 or more, that's just part of their lifestyle.

If you're only getting 3,000 per day, if I take you for a course to several weeks to 7,000, that's probably going to be a big change for you. If you're at 8,000 and I take you to 12,000, it's better but it's not going to be this massive change for those 4,000 steps compared to the other case. That's what's hard because a lot of these systems end up becoming very non-linear.

In your case then, I would look at everything you're doing and I may even program some low level aerobics training on the off day or on a morning. You know, just to get a little more movement, probably burn a few more calories, maybe up-regulate the use of fat possibly, a little bit more, that might be useful and then people who are – I guess I consider them kind of type A, kind of high strung a little bit more. The thing that they're normally really bad at is any type of down regulation.

Can you – you're like a Zen style meditation, just go sit and stare at a tree. I did a very easy beginner style to this for two days in Costa Rica like two years ago. We had two guys there who were just awesome guys, they're both trainers. They didn't make it to the next day because fitting for them which was way different than anything they've ever had to do before was way too much for them you know? Which sounds crazy that you know, okay, just sit and relax and stare at something.

We did walking meditation and we did everything. They're either just like dude, we're going to the beach, we can't hack this. It is a big jump if you've never just kind of sat in silence for a

couple of minutes, you know, to go and do that for a whole day, man, that's a massive change. But if you're one of those people that's very high strung, very twitchy, I think that getting some form of down regulation is going to have a very big payoff. Even though it kind of flies against the total calories burned type thing on a linear relationship at face value.

**[0:22:22.0] AVH:** Yeah, you're definitely speaking to me, that makes a lot of sense. I think what you're saying too with the linear, how things they don't work in a linear fashion because that would be way too easy and we'd all be fit and have abs if that was the case. I guess, is that sort of old the – you hear all the time like you got to keep your body guessing, is that still sort of a legit thing in terms of maybe the amount of NEAT that you're doing, the amount of working out you're doing, even sort of your calorie and your macro breakdown, that sort of switching things with some irregularity and switching things up can be helpful because your body has to adjust or your body has to pay attention. Instead of just kind of sticking to the same thing and like reaching these plateaus.

**[0:23:01.3] MN:** There are some truth to it in that the more you do something, the more efficient you will get at it and the less from a pure caloric burn standpoint, you're going to be burning fewer calories over time. If someone came to me and said, "Hey, my exercise is pretty good, my nutrition's great, my lifestyle's awesome. You know, I've only got an extra 20 minutes a day, maybe 30 minutes a day that I can add to do anything more and I'm already walking, I'm moving around pretty good, I kind of fidget,."

I'm like, "Okay. Take 10 minutes to kind of do some form of meditation, you know, three, four days a week, take that other time and do probably the most inefficient thing that's low impact that you can." In a perfect world it would be like, go swim in a lake. Most people are very inefficient at swimming, it's very low load, it's buoyant, you get a whole bunch of other proprioceptive feedback, it's completely different.

In general, I'm going to tell them, pick up some other form of recreation as a hobby, go play tennis, heck, go play golf, you know. If it was up to me, I'd tell you to go learn to kite board or surf. Do something where there's a learning, a motor learning aspect. Ideally outside in a different environment and I think from a total development as a human in addition to burning more calories, that's probably going to be a high leverage point.

**[0:24:32.9] AVH:** I suppose then, you also get the mental side of it too because if you're learning something new and trying something new that's good for your brain and it makes you happier and it's more fun. It's kind of a win-win in all areas, right?

**[0:24:44.3] MN:** Yeah, I think a lot of those people that are super regimented, they're very successful with what they do but I have this feeling that I think they just get bored because it's – how do you match routine versus novelty, right? How do you kind of balance that out and you know, if you want better body composition, you know, erring more on the side of routine is definitely a move in the right direction.

**[0:25:09.0] AVH:** Right.

**[0:25:09.4] MN:** However, it's a great tendency to get really bored doing that too. To not be learning new movement patterns and to be, having your body move through different space. How do you kind of balance those out.

**[0:25:25.0] AVH:** Okay. Another question that I had when I put that out on social media that I was going to talk to you that I'm kind of interested in too, is someone asked me about maintaining, I suppose, the difference between maintaining and gaining muscle mass and functional strength over 40. This was a woman, so I'd like to – if there's kind of specifics for women versus men.

If there's anything that you do different when you're trying to just kind of stay fit or if you're trying to actively get stronger and gain more muscle. And one of the reasons why I think this is so fascinating is because in the world that I'm living in and the interviews that I'm doing and the people I'm talking to, it seems like there is – it's like, you're either worried about fitness or you're worried about longevity. You kind of have to pick one or the other.

That's like it's kind of frustrating to me because I'm sort of in the middle, I'm not 21 anymore, I'm not trying to kill people in a CrossFit gym but I'm also not like, I want it fast so I can live to be 120. I'm somewhere sort of in the middle. I'm interested, I'd love to know what your thoughts are on this.

**[0:26:24.8] MN:** Yeah, a couple of things, I come back to a template that I kind of use for people who still want to make progress but – nor kind of concerned about longevity and we'll come back to that but in her question directly, you don't need that much work in my experience and there is research to support this to maintain where you're at or at least a pretty high level of that, you know?

I've gone to periods of time that a client do this where sadly I've only lifted one to two days a week and I've been able to maintain pretty much 90-ish percent with where I was before. Now, if you said okay, I'm a client and I want to get significantly stronger or add lean body mass. Okay, now you're probably going to have to do more than one to two days per week unless those end up being really long sessions and things like that.

You can kind of make progress there but it's much more difficult. First thing I look at is just what is overload. People tend to be, especially without working with a trainer following a program, they tend to be very much creatures of habit. They go to the gym, they kind of do a similar stuff and they're not really asking more of their body and some very cool rat studies where they did like a hind limb suspension or they have them run around their little cage and they pull their hind limbs up on a little track that goes around.

Their front limbs get this massive amount of overload, they shifted their bodyweight on them and it's 24/7. The back limbs have had almost all the load removed from them and then what they've done which is kind of sad but they've castrated them, they've pulled out different parts of their brain, they put them on low protein diets and what they saw was that pretty much nothing they could do what can stop the amount of hypotrophy and strength gains in their front limbs.

Now, if we give you more protein, we do certain things, yes that will help get you a faster result but that overload was so massive that there wasn't anything they can do to completely stop that adaptation. That's the first thing I look at is are you asking your body to do more volume, more density or more intensity?

Now you have to take another long term approach to that but if you've got the stimulus in place then we're good on that front. Next part would be more on the nutrition side, if you really want to

push that being in a caloric surplus unless you're just brand new, probably going to be, I'd say, virtually a requirement, it's just really hard to gain a significant amount of lean body mass in a caloric deficit, drugs aside.

You might be able to get stronger, right? But gaining body mass, caloric surplus definitely going to need that. Even then, natural type athlete, you're looking at best case scenario, eight to 10-ish pounds of lean body mass per year, maybe a little bit higher so that's not a lot. That's pretty slow and that's if you're doing a lot of stuff correct. I think some people think, hey, I'm going to start working with a trainer, I'm going to do stuff a little bit better and I'm going to gain six pounds of mass this month and unless you're untrained and never really trained before or some weird outline freak, it's not going to happen.

**[0:29:40.8] AVH:** Right.

**[0:29:41.0] MN:** Then obviously recovery of sleep. Sleep is a big one, it's a cool review that was done recently that was asking that maybe the difference we see in responders versus none responders a training, had to do with their sleep status. Sleep obviously and recovery is a big one with that.

If it's a woman in their 40s, I wouldn't really do anything different, I would keep an eye on the overall stress and I do like measuring heart-rate variability. Things of that nature, to get an idea of what's going on, I just find that in general, while it's a vast over simplification, they tend to be a little bit more stressed, they tend to be more almost over committed to other people and giving themselves more time for themselves is usually harder.

Again, those are generalizations but I find that's true most of the time and then if that person says well hey, I kind of want to look at longevity here also that as you know, in the fitness world, it's – everything has to be an extreme, right? We can't have any moderation because now, longevity is becoming kind of a bigger topic.

**[0:30:50.2] AVH:** We can't eat carbs ever again if we want to –

**[0:30:52.5] MN:** Yeah, no carbs ever, that M41, don't ever stimulate that thing, that's horrible for longevity because you know, we put earthworms on a low protein diet and we just cut their calories by 50 to 60% and man they live almost twice their life.

**[0:31:09.7] AVH:** That is not a life I want to live personally, but anyway.

**[0:31:11.7] MN:** Right if you scale up from there, the result doesn't hold it at that percentage. Some of the preliminary data in humans as we don't even know if caloric restrictions are helpful and it's sad but if you look at people who have done self-impose severe caloric restriction for longevity in cutting their calories, they are 40 to 60% very low protein, they are eel shape right looking people. I would say that in terms of function probably not super high and from data what do we know is associated with longevity?

Well we know it is a VO2 max, lower body strength and grip strength. So from trials those three functional indicators are like the top three. So if you are severely restricting your calories and you are severely restricting protein for hypothetical benefit, those three things are probably going to go down. So what I do with people then is I do like some form of fasting. I don't think everyone has to do it. I am doing a seminar actually in Vancouver in February on this.

And I will be going all the way back through all the research on the autophagy and all that kind of stuff to see is there really anything there we can pull out for human use but what I'll do is I will say, "Okay let us take one day." Let's say Monday and I am going to work you up on a 19 to 24 hour fast. The rest of the time you're probably going to be caloric neutral or maybe a little bit if a surplus depending on your goals and we're going to run mTOR one which is the anabolic pathway.

And there's more pathways than just that one. But higher protein on those days, a little bit higher calories, more carbs but that one day on Monday where we're fasting, we're hedging our bets a little bit towards the longevity side. We are going to drive insulin down. We are going to cut out a whole bunch of calories. So depending on the rest of the week, maybe calorically negative depending on how you end up or what your goals are.

mTOR is going to be basically turned down. AMPK is going to be elevated. So you get a lot of the benefits of what's touted for longevity but you are doing it only about one day per week. You are not going to lose a lot of muscle. Let's say from a muscle protein synthetic response you are probably neutral. Definitely not gaining a lot of muscle on that day for sure but it is not going to all fall off your bones in one day either and what I like about that too is that there is no change in your body's ability to use carbohydrates.

So if we take someone and we put them on a ketogenic diet, so low to moderate protein, very high fat, super low carbohydrates overtime you see a change in something called PDH, pyruvate dehydrogenase, it is just the molecular gatekeeper to glycolysis or carb metabolism and that will actually down regulate overtime. So if we all of a sudden give you a massive amount of carbs, you are going to have a harder time accessing them to the full degree.

So if we test you on speed and power, you are going to be often a single digits like three, four, maybe 9%. Again, if you are not super worried about performance, not a big deal but if you are trying to pump up lean body mass and strength, that could be a pretty big deal for a while getting that top in cut off. With fasting, we don't see any short term changes in the PDH enzyme so therefore we can come back Tuesday after your fast, give you more carbohydrates and have you train heavier.

And you would still be able to access and use those carbohydrates for performance. So that is my bias on a template.

**[0:34:59.0] AVH:** Okay this actually leads into the next question, the topic that I wanted to get into which is the concept of metabolic flexibility and then we'll lead into flexible dieting. But can you talk and you were talking about it but can you get a little bit more into what exactly metabolic flexibility is and why it's a good thing? Why we should aim to have it and how and when we would use it.

**[0:35:24.8] MN:** Yeah, so again in fitness everybody wants to pick, "Oh carbs are great because you can't perform in high levels of performance without carbohydrates" and then, "Oh but no, no fats are better because you've got so much stored fat, you need to teach your body to be a fat



burner not a sugar burner.” And both of those are kind of true but again, it depends on the context and to me arguing about what the best fuel is the wrong question.

It is when do you want to be using each type of fuel. So metabolic flexibility would say use the right fuel at the right time. So if you are going to the gym and you are going to lift heavy or trying to gain some lean body mass or you are doing CrossFit or strong man or power lifting, whatever type of training you’re doing, being able to use carbohydrates to the fullest degree is going to help your performance. It is also going to feel easier and generally it is just more fun.

But anyone who is trying to exercise in very low carbohydrates you are not going to find that a lot of fun. On the other side of the spectrum, you know sitting as we are talking having this podcast, if you are just burning through a crap ton of carbohydrates, I would definitely argue from definitely a health perspective and maybe body comp that it gets a little bit dicey that you are not doing yourself any favors and you don’t need to be doing that.

We got more than enough fat, fat can produce three times the amount of energy for the same amount of sub straight versus carbs but it is a lot slower. We can’t access or get as much ATP at the same rate as we can with carbohydrates. But if you are just hanging out and doing some low intensity or going for a walk or need a swim in the morning or a 5K on the rower or whatever, you don’t need a lot of energy very fast. You are doing low to moderate level exercise.

So using fat at that point is going to be a better selection. The metabolic flexibility is how well can you use carbohydrates when you need to, how well can you use fat when you need to and then how well can you switch back and forth between those two. If I put you on a ketogenic diet, so one of the things that I want to put my head through a wall is people are like, “Oh you need to do a ketogenic diet to increase metabolic flexibility.”

Well they got half of the equation kinda right. So if we put you on a ketogenic diet, we do this for a long period of time, we will up regulate the body’s use of fat as a fuel. So definitely like in the faster study I will show that and actually rewrote the textbook on how much fat your body can use in highly trained very long term keto adapted athletes. So that is pretty cool that is fascinating. But if you were to go do something that required carbohydrates or required a higher intensity of exercise, in general you do not do as good.

So you are giving up like I said maybe a single digit percentage on the carbohydrate end of the spectrum and if you are not a super competitive athlete or don't care about that, hey, it probably doesn't matter but I would argue if you are then all of a sudden that becomes a big deal. So I am fine with people doing whatever diet they want to do. I don't really care but does what you're doing match with where you want to go?

So if you want to qualify for the CrossFit games I would say doing a ketogenic approach is a horrible idea. If you tell me that, "Hey I've got a TBI. Maybe it got locked in the skull or it got some pathology, I am working with my physician on." Or, "I just like doing moderate intensity exercise. I don't care about speed and power." That might be very useful for you if you can follow it.

So again, it depends on what you are trying to do and for what reason but you do not have to do a ketogenic diet to increase metabolic flexibility and I would argue that it is actually costing you some of the carbohydrate end of the spectrum.

**[0:39:25.3] AVH:** Okay, this is a really interesting point for me because that is something that I have heard echoed over and over that if you do want to be able to access the fat metabolism and all of these things you have to have been in ketosis for some significant amount of time so that your body knows what that's like and feels it and all that kind of stuff but I guess my question then would be and again, I am relating this back to "normal average people".

Who maybe athletic and very active but aren't high level athletes. So if we have no interest in being in ketosis, ever, but we do want to have this metabolic flexibility, I hear a lot of people say they struggle with going back and forth between lower carb days and higher carb days and even 20 hour fasts, like something you were mentioning because if they are more used to being a little bit more carb heavy or carb dependent that those days are harder for them.

Maybe it is even a mental thing because they are just used to having the sugar or they get some sort of energy crashes that maybe people who are more fat adapted wouldn't have and so what would your suggestion be for people who want to stay pre-moderate but maybe want to be flexible so that they can have higher carb some days. They can fast if they're traveling, if they

want to and they don't want that to be an added stress for them. So what are some suggestions you have for us to get that metabolic flexibility?

**[0:40:46.3] MN:** Yeah, so my bias is if I look at it as a spectrum, so on the left end of the side I've got the use of fat, the right side of the spectrum I've got the use of carbohydrates. And this has been well documented by Brooks and Mercier in the mid 1990s called the crossover effect and what it says is that in a healthy person, if we put them on a treadmill and we work them all the way up to VO2 max, so a max intensity exercise test.

They will start out primarily using fat and they'll transition to using pretty much a 100% carbohydrates. And that is just the normal fuel change that the body goes through and that is correct. The interesting part, where it gets messy is that that crossover point, so that point where you are burning 50% carb and 50% fat, you can move that around a little bit with training and some other interventions. The catch is that it's a bio-energetic fact that you will never be able to 100% use fat and compete with the rate of carbohydrate use for speed and power. You just can't do it.

Now can you move up and get a much higher percentage from that by using more fat? Absolutely. And then on the left end of the spectrum on how well people use fat at rest, it's way more variable than what we thought, right? So the old thinking was, "Yeah, everyone just at rest. They're just all using a high percentage of fat." And what we find when we look at the studies is that that's probably not true at all that it is extremely valuable.

So a study that [inaudible] did one, [inaudible] just did one, I did one and it just took people who are recreational athletes broaden them on the street, have them do low to moderate exercise in a fasting condition. How well their body was able to use fat varied from about 20 to 93% and some people were just horrible at it. Other people were pretty good. So we do know that how well people can use fat is pretty variable. So there is some truth that you should get better at using fat.

So I want to now push out both ends of the spectrum as far as I can go. So on the right hand carbohydrate spectrum, I do want the ability for some clients to have a higher carbohydrate meal and not feel like they're going to be face down in their oatmeal in the morning and then fall

into an insulin induced stupor. That is not good. So the rough test I will have them do is what I call the pop tart test which everyone loses their mind over.

But it's like yeah, for breakfast I want you to have two pop tarts and then just document how you feel for a couple of hours. They're like, "What? You want me to ruin my breakfast eating this highly processed crazy carbohydrate thing where the frosting is some type of NASA grade ceramic that doesn't melt in the toaster?" Like yeah, why? Because those things are going to survive in apocalypse, right? If I want the most hearty carbohydrate that's dirt cheap that is probably a big stressor to your system, I just want to see how you can handle it.

You know if you tell me, "Yeah I am going to take a nap for two hours right away. after." Yeah we can get fancy and do blood work and we can do kind of a rebel who suggested with looking at carbohydrate amounts and glucose and all that kind of stuff which is super cool and very useful. But I would argue if you just feel crappy, you probably have a hard time using carbohydrates and yes, you can substitute 80 grams of white rice or bananas or whatever your favorite carb is. I don't really care.

And then on the other end of the spectrum on the left side for fat use, what is a way in which exercise is excluded, how can I get the highest use of fat. Well it turns out fasting, why? Because when I fast I am going to push insulin levels lower and lower as insulin goes down it is more of a fuel selector switch that I stole from Jeff Volek. So lower levels of insulin will push your body to use more fat.

So how long you can fast and still feel pretty good I would say is a rough field marker for fat metabolism. Now where people go awry on all of this is again, they want to do the extreme and I totally made this mistake probably 10 or 11 years ago. Brad Pilon had the book, *Eat Stop Eat*, my body and mind told me that he just started doing fasting where he hadn't eaten for over 24 hours. I remember we had this conversation in Arizona, we are sitting at a subway and I'm like, "That's crazy! All of your muscle is going to fall off your body. It is a horrible idea!" And he's like, "No man I have been doing it for three months and it's been great" and I'm like, "So weird."

So I spent six months pulling through all the research and Brad had collated a bunch of it and we were back down in Arizona again for some training and I'm like, "Okay training finished it's

Monday. All right, I am going to do a 24 hour fast.” So here I go and I made it until about noon. I felt horrible, I ran across the street and sat at a Chinese buffet for about two hours.

**[0:46:01.0] AVH:** Nice.

**[0:46:01.7] MN:** And I’m like, “Ah this fasting, I knew this was stupid.” And no, not being too bright I tried this a couple of times at different places and then I realized. I’m like, “Oh wait a minute, what am I doing?” You know at this point of my life, whenever I was awake, I literally had a timer on my digital watch for three years that would go off every two to three hours so that I would actually eat something because before I was a very large six foot three eel shaped rake at about 156 pounds.

And it worked well, you know I got up to 190 doing that over the course of three years but I had trained my metabolism to be expecting food every couple of hours when I am awake. So for me to go 24 hours, that’s a massive jump. That would be like coming into my gym in my garage and being like, “Hey, you have never dead lifted before. Oh it’s cool, we’ll put four plates on a side and I will just yell at you to try harder.” You know?

Unless you’re like Andy Bolton in high school. It is just not going to come off the floor but I can put 135. I can put 95, you can start with the bar. It doesn’t matter as long as we scale it to where you are starting. And once I figured that out I’m like, “Oh I’m so stupid!” I said, “Okay what if I just push breakfast out by two hours on Monday.” Okay that wasn’t too bad. Okay, what if I just add another hour or two hours the following Monday. Not every day, the following Monday like are you really going to train dead lifts every day? Probably not.

Okay and so I did that in the course of six to eight weeks, you know I could do 20 hours pretty easily. So I have done that with most clients and most of them within six to eight weeks if they are very progressive and they don’t over shoot, they could do a 19 to 24 hour fast relatively easy which I was pretty shocked at. I thought compliance would not been quite that high.

So fasting is I think a way to increase your body’s ability to use fat on the left end of the spectrum. You’re in some type of carbohydrate challenge is the way to increase it on the right hand end of the spectrum and now again, you can then get fancy with what interventions you

want to run and how you want to do that but that gives you markers and test you can repeat to know when you are getting pretty far end on each end and I think that is the biggest step that people forget is they want to jump to the hard end point that they physiologically just have never really been there before and then it is a debacle and then they're like, "Oh I knew this was crap!" It will never work.

**[0:48:34.3] AVH:** Yeah, I think that's probably one of the few downsides to how much information and knowledge we have access to these days is that we do tend to try to jump into things that sound new and fun and sexy right way and go all the way into it without maybe testing the waters a little bit first. And I think what I am hearing over this conversation is that more of something good isn't always better and so it is worth maybe doing some research based on self-experimentation and just having a little bit of common sense.

But one of the things that you touched on that I wanted to ask quickly, you were talking about eating every couple of hours and your metabolism is kind of expecting that and getting used to it. Is it true because I have heard both, I have heard yes and no to this that your metabolism, you can damage your metabolism by severely restricting calories? And you can lower it to the point where – I am thinking from a female perspective.

Because we are always trying to be leaner and skinnier and we are trying to eat 1400 calories and still workout for two hours a day and all of this ridiculous stuff but can we mess our metabolism up that way or is it if we say someone is training for a body building competition so they have three months of progressive caloric restriction and then they are super lean for a month or two and then they wanted to go back, can your body bounce back from that pretty quickly if you progressively go back out of that diet? Or is that something that can really affect you permanently or for a long time? How does that work?

**[0:50:02.9] MN:** Whoa, that is a really good question. Will it have a change? Yes, will you in my opinion permanently damage your metabolism, I would say no. We don't have any data on that yet. I know my buddy, Dr. Bill Campbell has been doing some studies on a female figure competitor and stuff. Even if we look at literature like anorexic, some people who have done crazy things to their body, the resting metabolic rate doesn't just fall to zero.

If it did you'd be dead anyway, right? So your body tends to protect that pretty well. Now will that change? To some degree, probably yes. Is that the main change? Probably not like we talked about NEAT. Your NEAT well just pull on it anyone who has done very low calories will tell you that you just don't want to move. You don't want to get out of bed, you don't want to train, you don't want to walk the freaking mailbox, right? You are just not going to want to move.

So that will definitely drop the thermic effect of food, maybe it changes a little bit but it is generally NEAT that changes the most. And how I think of it, so I have done some HRV on pretty high level natural physique competitors and what you will see is that they are very stressed on the day of the show. Which makes sense. We've got a lot of other literature, some case reports on this also. But that stress doesn't mill your rate the second you step off the stage, right?

It is an accumulated stress just like anything else and they are still in the stage of being very lean which is a stressor onto the body in it of itself. So the little rule I have if I work with them is that you can't even - especially females, you can't even consider doing another show until I see that normalize for at least two to three months. You need to get back to some level of reality before you want to entertain or do anything else.

Now how fast should you increase calories that's debatable. I guess I would say I am more on the Dr. Eric Helms side where try to get them back up to something reasonable faster because being that lean is just not a normal state and it's costing you time because the longer you're there the more stress you have, the longer it is going to take you to recover. However you talk to Dr. Layne Norton, he would say, "No you should reverse diet pretty slow out of that."

My guess is that it also probably has to be a lot with psychology because if you are that lean and you start overeating, oh man that is very hard to stay disciple there. Probably harder than even before your show from people I have worked with and I only work with a handful of physique competitors. It is not mainly what I do. The running joke I have is that now you just have to be not nuts and then I will consider working with you.

**[0:52:56.8] AVH:** Yeah, good luck finding clients. Yeah.

**[0:52:58.8] MN:** Yeah, I only had done it with just a handful of people. But there is a big debate in there and my guess is trying to get back to some normal end of physiology and then see what happens. Now the time course on that is long. Like some data and I think it was males would be six to nine months possibly. If you talk to competitors on how often they intelligently do shows now, you are actually starting to see it become longer and longer between.

But if you say hypothetically it takes nine months to get back to “normal physiology” that’s just to get back to where you were. Now if you want to make any changes to that, let’s say you want to add a couple of pounds of lean body mass, okay that is another several months and now you probably have to diet down from there, hell the next thing you know you are looking at two years realistically you know? So I think that is a big component of it and this is assuming that people do it intelligently going into it.

You’ve got all sorts of still crazy stuff that people do, eating tilapia and broccoli to feed their skin and god knows what’s going on. So even when you are doing it intelligently, you’re going to have some pretty massive stressors the body is going to do. Now I think can you recover from that? Yes, is it going to be while? Yes. Are there sometimes where that’s not going to go as planned and you probably need to see a functional med doc and figure out your thyroid and a bunch of other subcategories?

Probably but again, I think that a lot of that is just your body responding to the stressors. We’ve got data to show that if you’re stage lean your thyroid is going to suck. It is going to be bad, that’s just your body responding to stressor. A good buddy of mine, Ryan who has competed, my friend Dr. Ben Hollis has done his blood work and he’s like, “Yeah, it was horrible!” and both of them are very intelligent. Ryan is super diligent, super intelligent guy.

But again, you are asking your body to go to a place that’s just not wanting to go and there is going to be a cost associated with that.

**[0:55:05.7] AVH:** Right. Yeah I guess that is one of the other downsides to social media and the way that we can hyper-connect with people who are athletes who are doing crazy things and kind of making again “normal people” feel like they should or would want to do that kind of stuff



too because I talk to a lot of doctors and people who work with athletes who are like, the people who look the best and it is arguable whether people who are actually stage lean look the best.

That's a subjective thing but you look at athletes and football players and runners and sprinters and swimmers and all of these people and you're like, these are the fittest best looking specimens of humanity and they're the people with the worst blood work. So it is a really tough disconnect because even those of us, type-A sort of recreational athletes who just want to work out and want to look our best, it is very hard to find that balance between what is truly best for us physically and what makes us feel the best about ourselves, right?

So I guess that is why we're all sort of a work in progress, trying to figure out what works for us, right? Because there's no one easy answer for anybody.

**[0:56:07.3] MN:** Yeah, I mean, have your markers have your blood work. Work with a coach or someone who knows what they're doing and take the amount of time you think it's going to take and probably multiply that by about two or three.

**[0:56:19.6] AVH:** Yup.

**[0:56:20.0] MN:** Probably be kind of close.

**[0:56:22.7] AVH:** Yeah, I mean, that is the – that's like at a perfect word of wisdom I think to end off on here because I know I have to let you go but I think that's another thing that's really important for people to know is that to change habits, to be healthier, to make changes in your behavior and your strength and your body composition and your nutrition, all of these things.

To do it sustainably and healthily, it takes longer than you think it will. However long you think it's going to take, it's going to take longer than that. So the patience and consistency that is involved is actually more difficult than just following somebody's plan for how you're supposed to eat, right?

**[0:56:55.4] MN:** Yeah. It's hard because it's like we're talking about, it's nonlinear. I even work with a coach for nutrition stuff because I did pretty good for a while but I'm like okay, probably

get about 15 pounds leaner than where I'm at. I know that it's probably going to take some time and I'm cool with that but I need someone to hold me accountable, I need to send my goofy pictures in and my measurements.

You know, all that kind of stuff which has been super helpful. Even I know that it's very nonlinear, it was hard to watch my bodyweight not change for like six weeks. Even though I'm cognitively I know what's going on and then literally almost like overnight, I dropped four pounds. I know that's coming but even when I know it and I've seen it and the clients like hundreds of times. Still doesn't feel any different. It's like, "Dang it!"

**[0:57:49.1] AVH:** I think that's a great message for people too though and I have the same thing like I have done some figure competing in the past and I really enjoyed the process of like seeing what my body's capable of and you know, seeing you're abs for the first time ever in your life, it's kind of cool. Yeah, when I have goals like that, when I want to maybe, I don't know, look good for a photoshoot or I'm going on vacation or something.

I have the tools already and I'm still paying someone for that accountability and for that support and I think if someone like you with all of the knowledge and the tools that you have, still make that choice too, I think that's a good message for people. Because I think people think like, "Hey, I did a bodybuilding competition once, I have a friend on Instagram who knows some stuff. I don't need any help."

We all need help and I think that that's why I appreciate you coming on the podcast and talking because we need people like you to give us the information, make that stuff available. I really appreciate you taking the time and chatting with us today, we'll have to do a part two sometime for sure.

**[0:58:40.6] MN:** Yeah, for sure, anytime you want and thank you very much for all the time and coming out to see the talks and everything and hopefully I'll see you again at Paleo f(x) this coming year.

**[0:58:50.8] AVH:** For sure and I will have lots of – I'll be sticking my hand up and asking you lots of questions, as always. Before we take off, where can folks go online to find out like the work that you're doing and connect with you?

**[0:59:01.6] MN:** Yeah, best place is probably just through the website which is just miketnelson.com and the top there in the main home page, there will be a way to get on the newsletter. So most of my content goes up through the newsletter. So probably about six times a week so you can just hop on there for free and if they're interested in the certification, it's just flexdiet.com and those would be the best two places.

**[0:59:27.4] AVH:** Awesome, all right Dr. Mike, thank you so much and enjoy what were you doing? Kite surfing? Kite boarding today?

**[0:59:33.1] MN:** Yeah, we're headed out to South Padre and do some kite boarding for a little bit over a week. It's super fun and if you haven't kite boarded, you should.

**[0:59:41.8] AVH:** Yeah, all right, I'm adding it to the list.

**[0:59:43.6] MN:** All right, awesome.

**[0:59:44.3] AVH:** All right, take care.

**[0:59:46.2] MN:** Cool, thank you

**[0:59:52.1] AVH:** That's it for today, thank you everyone for listening, as always, I appreciate it, I really mean it and I appreciate your willingness to download this podcast every week and listen to my voice because I don't know if I can do it.

Next week, we're going to hear a story from Marni Wasserman, she's a woman who went from a vegetarian diet to a paleo one and she now works to inspire and educate and encourage other people to find a plant based paleo diet that's best for them through a very popular blog. Her cookbooks and her podcast which is called the Ultimate Health Podcast. I always love stories about people going from the dark side and finding paleo.

Kidding. I don't judge if you want to be vegetarian but I will welcome you with open arms when you eventually decide to eat a delicious steak one day. Okay, I'm going to stop talking. Thanks again to our show sponsor Bonafide Provisions, go to [bonafiedprovisions.com](http://bonafiedprovisions.com), use the code "onlybones" and get 20% off your choice of organic slow simmered, pre-made bone broths in a whole bunch of different flavors and bases as well as a range of their super healthy, high quality bone broth based soups. I got that out pretty good.

All right. Anyway, these are perfect, just in time for winter. They make it easy, you don't have to make the bone broth yourself, they're delicious, they're easy to just take out of the freezer and heat up, try it out, "onlybones", 20% off, [bonafiedprovisions.com](http://bonafiedprovisions.com).

Check it out, thanks again and have a great week.

[OUTRO]

**[1:01:14.8] AV:** The intro music for Paleo Magazine Radio is a song called 'Stronger' performed by Alter Ego and I hope you love it.

[END]