

Dave Barr


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SPEAKERS

Dr. Mike T Nelson

 Dr. Mike T Nelson 00:01

Hey, welcome back to the pod cast. I'm super excited. Today, I've got my good buddy David Barr on the program. And we are talking about his new arm training book, which will have a link to it down below where you can pick it up. I've known Dave for man, many years now and always great to talk with him. I always learn new stuff. And while it is an arm training book, which is great, he also has a lot of other information there about how to set up your training in a better fashion, different aspects of your central nervous system and just the nervous system overall, and how to get better training affects. Dave was nice enough to have a quote for me in the book. But I don't have any other disclosures for it. I don't make any money if you pick up the book or not. But it is really good. And I've enjoyed it. And I'm super excited to get him on the program here today. And to talk more about that and anything else the enhance your performance in the gym and add more muscle. As always, the podcast is brought to you by the flex diet certification. So if you're looking for a way to maximize your nutrition and recovery, to add more muscle, increase your performance and improve your body composition. All without destroying your health. Check out the flex diet certification, go to flex diet, calm, FLDT calm. And they'll be a way to get on the waitlist in the upper hand corner there. Click on that, that will put you on to the daily newsletter, where you get all sorts of free information on that topic. And you'll also be the first to be notified once the flex died cert opens again, to go to flex diet.com. Sign up to the waitlist there. And here's our conversation with the one only David bar. Hey, what's going on? Welcome to the flex diet podcast. And today we're here with my my good buddy, David bar. Say Hello, sir. Hey, that's me. Let's do you're on or live or

whatever. Those are you doing?



02:34

I am doing fantastic. Very excited to talk about my new book in the massive implications, which are related to the title, which is massive muscular arms published by Human Kinetics. And I really think that you're going to like especially one of the contributors who talked about metabolic flexibility.



Dr. Mike T Nelson 02:57

How that aihole get in the book. But yeah, I got a copy of the book here. So thank you to them for sending it. And I thought it turned out really good. And the pictures and everything were good, like how it was listed, you've got a lot of like the equipment setup execution, and then the coaching tips on it. So not only do you got pictures, but you've got all sorts of how to execute everything to which I think is super useful sometimes. Especially with, especially with books that can be harder to convey how to do an exercise in the version that the author wants them to do it. I think a lot of stuff has gone to video, but I'm still one of those weird kind of old school people where I like having books. I like that it's offline, I can sit down on my couch and read. I'm not distracted by 800 things online. So I still am one of those weirdos probably like yourself, judging by the books in your background that I think books still serve a very good purpose for that.



04:01

Yeah, absolutely. I mean, I mean, it's cool to have, you know, everything available online. And you know, you have a PDF, you can do what you want with it. But there's something to be said for holding a physical copy of a book in your hands.



Dr. Mike T Nelson 04:14

Yeah. And the other part too, I've been on this thing lately where for the price of books, they're still so insanely cheap for the amount of time and effort and history and experience that someone puts into it. You know, the fact that I can pick up your book from home, what is it like 25 bucks or something like that, and consume the content and basically get almost a download of your brain on a specific topic to me is kind of it's still mind blowing.



04:44

I like that. I like that. And that's actually a good point specifically with where I was going with with my book because I've been involved in strength conditioning for over 20 years now. Started off back in the day, University of Waterloo. Dr. Stu McGill was one of the My earliest mentors in the field and writing this book, taking those 20 plus years in the industry, and then almost 30 years of training myself now really helped me reflect on the number of people who have influenced me in so many different ways. So it was cool to look back. But also really, I started to appreciate all the the people who were involved and what they taught me whether or not they meant to teach me something specific. People have been very generous with their time and their patients. And I really wanted to start offering gratitude and acknowledging that. So rather than just giving, you know, some standard meathead system that is proprietary, or something I played doing about developed, I really integrate dozens of experts throughout the decades to really give a synthesis of what I think is the best information and something that's usable for everyone.

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Dr. Mike T Nelson 06:07

That's awesome. I think that is, I think, on one hand, there's always a place for something that is original. But at this phase of the game, there's not really going to be that much stuff that's original. And if it's original doesn't mean that it's better than what we did before. And maybe completely utter trash, just because it's new and novel doesn't mean it's the best thing ever, you know, shake weights, and there's all sorts of stuff we can think of that's novel, that's just completely worthless trash. So I think being able to the next level down would be being able to synthesize stuff, I think, is a very, very useful skill that unfortunately, I get nervous is disappearing, that hopefully, none of my students are listening to this. But it's one of the things I try to, at least instill in them is like, you're going to have access to almost any type of information you want now, especially with the internet, by Can you take that and like you did systematically apply it to solve a problem. And I think that is a unique skill set that is then useful, because to the consumer, like I said, I can pick up the book and go, Wow, here's a download of debars brain for the last 30 years for 25 bucks, cool, like, and you took all these other sources and put it together, and I can then take it and go to the gym and go, Oh, cool, I can actually apply this now to, you know, not just arms, but ideas to the rest of your body. So I still think that's extremely useful skill that is not taught as much as it should be.



07:44

I really like the way you articulated that. And there's almost a tacit or unspoken warning when it comes to our industry, because, you know, the fitness industry is just, you know,

rife with hyperbole. I mean, it's infamous for nonsense. Yes, though, there, there are just so many historical examples where people are trying to build a brand and you know, they create their system, and they've got the one way to train, you know, they got the new best way. And it's the only way and just that type of dogma is it's absurd. It appeals to all people it appealed to me, when I first started training, Mike menzer, heavy duty style back in the day. And if I will say it is if you see, so if you hear somebody saying that they have the one true way, I mean, run to the hills, like Run for your lives, because there is no single way like you. So my goal is to give a variety of options. Really, you know, like I can give people a program if they want, which I'm, I'm happy to do we have to start somewhere. But really one of the keys to the book is personalization. What is going to be best for you. And I think in the 21st century, we are just begging for this type of training style. So I do it not only with programming, you know, show you how, like I walked through how to develop a personalized program. And there's guidance there, all the way so so I don't, you know, throw you to the wolves or anything. But you know, getting more reductive all the way down to your own personal anatomy. And that's why I think arm training is especially helpful because the personalized anatomy with our arms it I had no idea until I really dove in to the research on this book. I had no idea how personalized it was. So I really wanted to give people the opportunity to custom tailor, not just their their workouts and their programming, but also the actual individual exercises themselves.



Dr. Mike T Nelson 09:53

Yeah, that's awesome. And how would you go about giving, maybe not to give away all your secrets in the book. But what would be some examples of that? Because I think even for myself listening, I'm like, I don't know, it's just arm training, like, How different is it, but then I'm like, of course, it has to be different, right? You've got different insertion points, you've got different exercises you've got, you know, muscles, like the biceps that are by articulate the cross, you know, two joints, and you've got grip training on top of that. And so I'm like, Oh, yeah, that's probably more complicated than just do some curls. Yeah,



10:31

exactly. You're exactly right. And I, again, I didn't appreciate this. I mean, after training for nearly 30 years, I did not appreciate how complicated the anatomy of the arms actually was. And then the the degree that we can affect change with custom tailored programming and exercises. So I'll give you three examples across three different dimensions for how you can personalize this. And we'll start off super reductive, and then we'll build all the way up. So turns out, we in the scientific world, as you know, like, we don't fully understand how muscle growth occurs. But the latest theory is that there are three different types of muscle growth. And the idea is that by targeting each of them

individually, we can affect the greatest change, get the biggest collective increase in muscle growth. So what I want to do is I simplify this down taking from three theoretical types of hypertrophy or growth, I narrow it down to just two, which is basically a metabolic stress and a mechanical stress. So again, we want to target both of those to get the biggest bang for our buck. So I show how to do that our standard regular gravity based resistance training is a blend of both, it's actually more metabolic than it is structural. But it is a compromise and not in any way suggesting we throw out regular training, it's our bread and butter, I think it always will be. But 21st century, like there's new things that we can also apply. So I show how to tap into not only just the metabolic stimulus for growth, but also the mechanical stimulus for growth. And that's just one way of very precisely targeting your preferences and goals. The second way, is probably a little easier trust to understand it's just our own personalized anatomy. And you're right, I wrote the book, and I indicate that the biceps for example. Alright, by articular muscle. How about this? What if they are effectively a tri articular? muscle? room? How easy is that? I mean, yeah, I mean, I didn't, I didn't want to come over complicate the book. So I didn't talk about that specifically. But really, the idea is that the biceps control movement across three joints, even though they don't actually cross three joints. So shoulder, elbow, and wrist. Yep. So this is just that opens up so many opportunities for changing the way in which we contract the muscle, and ultimately provide that stimulus for strength and growth. So that alone is just a huge, huge upgrade in terms of our thinking that I think, you know, once we get smart people like yourself involved, we can really have a forward thinking conversation about how to develop new exercises and techniques to do that I got here. So really simply, I think that the simplest one is relates to the carry angle of your elbow. And if you look down, straighten your arms below you might be you can help me articulate this. But if you look down at your elbow, you'll notice that your arm bone, your humerus, it can be vertical, but your elbow actually kinks out to the side a little bit. So your forearms are not directly in line with your arm. And that angle is called carrying angle. And the idea is that you know, we can clear our hips when we're running. Don't have to know the details. But the idea is that different people have different magnitudes of carrying angle. Some people have a very large very often women actually have a greater carrying angle than men.



14:42

But this can impact how you perform your arm movements, every single arm movement. So if you look at your carrying angle, make as big as possible with your arms straight. Now imagine you're picking up a bar to do it. biceps curls. Now, curl this imaginary bar up, sir performing just a regular biceps curl. Now look at where your forearm is, relative to your arm to your humerus, it is now in line. So we have what's called a grip Delta, or a change

in the width, the spacing between our hands between the bottom of a curl and the top of a curl, for example, now, if we're using a barbell, we can't change that, right? We can change that during the rafter locked it. But it is important to consider not only if you are used to grabbing a barbell in a very specific way, which we probably all are. But also, if you have any kind of elbow pain, adjusting your grip, according to typically that top position is going to potentially help mitigate that pain. And it's personalized using your own personalized anatomy to change your grip to give you the biggest bang for your buck.

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Dr. Mike T Nelson 16:10

Very cool. And so would that be an argument for the use of dumbbells to allow that a little bit more movement through space to be less restricted then, so an easy thing I've told trainers is like, hey, if your barbell exercises start causing pain, just substitute them for dumbbell exercises and see what happens. You know, a lot of times like, Oh, my God, my pain went away, I was doing barbell bench press. And now I'm doing dumbbell bench press, and it doesn't hurt or I did our real bicep curls, and it hurt to now use dumbbells and it doesn't hurt. Right now, this is more of the context of being an online trainer and not necessarily being able to look at your technique. Yes, if you're a competitive bench presser, you're probably gonna have to use a straight bar. And so there's some restrictions with that. But is that kind of a similar line? Those that vein, allowing just more range of motion, for lack of a better word to account for occurring angles and differences? You know,

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17:11

I think that's actually an awesome point. I don't go as far as offering a prescription. So do one versus the other. It's more about let's let's start with the awareness, and then try this out, and then see how it works for you. Got it, because I have had people who have had a profound difference by changing up their grip, because I mean, again, we if we think that grabbing the bar on the knurling, you know, wherever that happens to be, yeah, that's a way to grab the bar. Because I because I read that there's, you know, here's how your grip needs to be. You know, it doesn't work for everybody, especially all the time. So just mix it up. And not only for pain, but muscle contraction, how does it feel to contract the muscle? And that's a really big emphasis in the book is learning how to contract the muscle maximally. And that's basically again, to get bigger gains, rather than just, you know, our traditional throwing around loads, which I've certainly never done before. Yeah. Yeah. So yeah, it's it's more about appreciating, appreciating the idea that we are trying to stimulate growth. Rather than we are just trying to move heavier loads. And it takes a while to really let that sink in, really helps, helps our ego take a backseat, especially if we

are focused, okay, yes, I am going to use a lighter weight, I am going to use better form. And I am going to focus on my muscle contraction, and that is ultimately going to give me bigger gains. And if you don't want bigger gains, then that's absolutely cool. You do whatever you want to do. But the key is, if you are looking for bigger gains, you really need to tap into your anabolic stimulus that you get from training. So I really tried to emphasize that. It doesn't mean you go light all the time, like there's a strength train phase for hypertrophy as well within the book. But the idea is, again, focusing on the stimulus, which helps remove our ego from the equation.



Dr. Mike T Nelson 19:24

I have lots of follow up questions. So going back to the biceps as a mover of three things, are you thinking about shoulder movement, moving across the elbow, and then supination like so hold a cup of soup versus pronation pat the dog? Is that what you're thinking of in terms of the three movements?



19:44

Yeah, you're exactly right. Yeah, the biceps do all three. I think you're right. I mean, they're a buyer ticular muscle, they only cross two joints, the the shoulder and the elbow, but they directly impact what happens other risks and what Are you at a risk impacts level of biceps activation? So the way it says it's practically or effectively tri articular. So just a young raise that awareness of what we're trying to do if we're trying to maximally stimulate a muscle for growth, breathing strength eventually, then we need to be aware of all the different opportunities, we have to stimulate as many fibers as possible.



Dr. Mike T Nelson 20:28

Yeah, an example I've told people on that is, imagine what you feel in your bicep doing reverse curl. So palms down, versus palms up, right? Pretty much everyone's gonna be like, yeah, I feel my biceps a lot more when I'm pumped up, right? Because that's, that's part of the function of the biceps. That's part of what it does in life. So



20:48

yeah, exactly, exactly. And there's a great way to play with this. I recommend, I mean, again, I don't want to be a dead horse. But I have been great for nearly 30 years. And what I love about this stuff, is I am just constantly learning new things about it as much as I've obsessed over it. So a great example, no joke, about two and a half hours ago, I was in

the gym, doing biceps, of course. But just playing with something, and this is something I'd recommend doing. To get an incredible understanding of the differences in muscle contraction, take a relatively light dumbbell, do a concentration curl. So you're leaning over your elbow, and your arm and shoulder therefore, are supported by your leg. So you have just incredible stability. And just quick sidebar, I appreciate that the There used to be a punch line, okay, preacher, or concentration girls, it used to be a punch line. But now that we understand a little more, they're more of the thinking man's curl or thinking person's Chrome, okay, because we really get to tap into every fiber, when we are that focused and not stable. So the key is, and this goes back to some of the anatomical variations and opportunities that we have, use what is called a pinky grip. So you are grabbing the dumbbell, the light dumbbell, with the pinky side of your hand, right up against the dumbbell, so you're not gripping in the middle, you're gripping on the pinky side of your hand. Okay, and this is going to basically give you a little forced supination. So it's going to really help you turn your, your palm upward. Now you do your set like that you're not, you're not turning your palm up. As you come up to peak contraction, you're maintaining maximal supination throughout, then do a follow up set once you've had appropriate rest, but use an index and thumb grip. So instead of gripping it in the middle, or at the end of the pinky, you are moving your thumb and your index finger up against the plate. So it's basically the opposite end. And this is going to make you work very hard to supinate. And yet, you're not just supinating at the end, you're not twisting your wrist, as you try, you are trying to maintain maximal supination throughout the entire movement. And you will feel a huge difference between those two. And that basically gives you a great indication of what the biceps are doing what other arm muscles are doing throughout the movement when you exaggerate the supination, or you have to really work hard to get to supination. So that's just one long winded example. But I just did it and I kind of excited about so I have to share because I

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Dr. Mike T Nelson 23:58

think it's it's super cool. That's um, that's super practical, too, that people can, you know, go out and apply right away. One thing I've done is some people I've noticed are missing pronation supination. Right. So that's a thing they're missing. And so if you want to go to the other extreme and emphasize that take like a sledge hammer or like a club Bell and put that like crosswise in your hand. And then you can either adjust the lever arm and do curls with it. So you even like a 10 pound club, if you've got most of the weight out here, right? Again, it's forcing you into that position. So you've got a heavy load more on pronation, supination and less on the bicep if that was your goal, or you can use the same thing and then do pronation supination with that movement. Right. So it's basically the inverse of what you were doing, again, depending upon what people are doing and for what particular goal but it's what I like is it's the same principle. Right? So once you

understand the principle of why you're actually Doing it, then you can adjust it to, you know, different needs. So if I wanted to emphasize supination, or pronation, I could go that way, if I want to emphasize more bicep function, I can go the other way.



25:12

Nice. Yeah, I love that. I love that. And there's some preliminary research that the biceps might, the two heads of the biceps might actually differ and turn it up, they're the amount of recruitment you get from each based on the amount of supination. So for example, the short head of the biceps might actually be more involved in supination. So that's where again, huge opportunity to really get your head inside of your own muscle to optimize your gains.



Dr. Mike T Nelson 25:43

Awesome. And I was talking, I think it was Eric Helms about this too. Do you think that muscle growth hypertrophy, just in general, is this weird sort of almost side effect? Right, because we know like training for strength, we kind of know what you have to do, right? It's primarily a solid principle specific adaptation to impose demand. If I want to lift a heavier benchpress, at some point, yeah, doing reps over, you know, probably 90% of my one around, I'm probably going to need to do that, especially after assuming I'm not just like somebody new to training. And I think, yeah, there is a role for having more muscle tissue, you have a bigger potential to move more load. But the end of the day, you can't get around the fact that you're going to have to lift heavy if you want to significantly get stronger. But it seems like for hypertrophy, you could do heavy loads and just do a shit ton of volume. Maybe your joints won't last. But you could potentially do that. You could do as light as 30% of load. You know, in some research, whether that's blood flow restriction or not is debatable. But it just seems like there's this really wide range of training parameters to try to get at hypertrophy. And on top of that the variability to programs, even the same program from one person to the next, at least to me, and I'd be interested in your opinion, seems to be much higher variability than there is for say, strength training.



27:15

Nice. Yeah, that is, Wow, that is a fantastic concept. And I guess starting off, cool. They mentioned Dr. Eric Helms. He's also somebody I mentioned in the book. Yeah, because he did a lot of the research on the programming aspect, which is the third type of personalization, which we can get to in a second. But yeah, you're exactly right. And I think what you're saying because of the variability, this is why I tried to emphasize what I

call precision micro targeting for the different aspects of hypertrophy. Because Yeah, so you do BFR you do the light load, probably going to get a much greater metabolic stimulus, and not so much the structural stimulus. Now you are going to get some structural BFR sucks, by the way, it is



Dr. Mike T Nelson 28:11

blood flow restriction, you want to explain what that is briefly, if people are like, what are these people talking about? Yeah, thank



28:18

you. So we have our blood flow restriction, you want to cut off the blood supply, leaving the muscle when you are performing resistance exercise, so you can use a much lighter load, but still get a massive metabolic stimulus for growth. And it's great for people who say older individuals, people have injuries, etc. There is a broad application, and I'm not sure that it's, I don't know, Mike, I would actually value your input on this because there seems to be a caucus, it seems to be the Wild West in terms of how people are practically applying BFR training, where there seems to be actual very specific protocols to do it. So for example, the tightness of the cuff that you put around your, your arm for example, your your upper arm by your shoulder, or across your shoulder. There's a it's individualized, that tightness. And it's can't really go by feel at first because it has to be tight enough to let blood flow in, but tight enough to not let blood flow out. Which we can't feel that so until we really establish a feeling which I don't know if we can. People may be shooting themselves in the foot doing this. Yeah,



Dr. Mike T Nelson 29:48

I mean, I've kind of gotten with Jeremy lenok. He's published a whole bunch of stuff on this, like, you know what they called practical blood flow restriction. And I agree that it just takes you kind of some time playing around with it. I'm a cheap bastard. So I just have like the old school knee wraps that I've cut in half if I'm doing arm stuff, or I'll leave the knee wraps, and if I do like stuff, and I played around with it for years, I would initially learned it 2014, from Jeremy. And when you get it, right, like, it's painful to, but just because of the amount of blood flow in the area, which, you know, for the silent training, I'm used to, I'm not really used to that. So my thought is, if I get people to just don't apply it too tight, we don't want to arterial occlude, right, we don't want to include blood flow coming in, you don't really know where that point is, without a direct measurement. There's different ways of possibly measuring it. But either way, you would need a direct

measurement, which is one a pain in the ass to do to is also expensive depend on what you pick. So I tell people just just put it on. And if you guess to light, it, maybe it's not having as much effect as you want. But there's even some literature I'm sure you've seen, too, that shows maybe the blood flow restriction isn't having as much of a benefit as what we thought, in terms of keeping the loads the same. But I figured, worst case scenario, usually I'm programming it for an accessory saying, like, biceps is a good example. And there's still doing higher rep loads that they would have been doing anyway, which we know there's probably going to be some benefit to that, right. So a lot of times I'll do the, which I got from Jeremy, like the 3015 1515 protocol, take a load, you can hit 30 reps with and then take another like, I do a lot of military press and bicep curls, right? Cuz I can use about the same weight, I don't have to change anything. And then once you hit 30 reps in your first set, and then drop down and do 15 reps. But if you're in worst case, if they didn't hit the, you know, venous occlusion type part right on the blood flow wrap, they can do it again next time and play around with just a little bit tighter, but they're still probably getting some mechanical tension, probably a lot of you know, metabolic stimulus by doing it anyway. And I program that usually in addition to the other work that they're doing. So what are your thoughts on that? I think they'll get a benefit, even if they don't hit the blood flow restriction part, like, you know, perfectly dead nuts on all the time.



32:19

Awesome. Yeah, very, very well. So I like that. And I, I don't know, what your experiences with clients, but unless he's super hardcore, you



Dr. Mike T Nelson 32:30

know, I find most people hate it. If it's general population. I don't even like it to be honest. Yeah, it gets kind of nasty. Yeah. Especially when you're just not used to it. Right? I mean, I've been trying to add a little bit more of that training in. And it's just, I don't know, maybe it's the older I get, the more I realized, like how hyper specialized I get. So for example, I did tricep press downs the other day. And so I've been playing with, you know, rep ranges of, you know, 20 to 30 reps in such a short stroke, you know, movement, your time isn't taking very long. And the first time doing just, you know, 30 reps close to failure on that. I'm like, Oh, I forgot how weird that, you know, hydrogen ions, the acidity, all that stuff feels just because I'm not used to training like that. Yeah, so for some people, they're more used to that. I was like, Oh, yeah, I forgot how much this kind of sucks. Are people really like that? You know, so it's an individual thing, too.



33:27

Yeah. Yeah, very well said. Yeah. And I think this is a great indicator of the type of precision that we can apply to hypertrophy training. Because everything you just talked about the hydrogen ions, the acidity, that's a potent stimulus for muscle growth, theoretically, what we refer to as the metabolic stimulus. For hypertrophy, it's, it's a build up of metabolic byproducts like acid, and potentially a minor depletion of energy. But overwhelmingly, we tend to shut down we tend to fatigue, because of the buildup of stuff of what's called metabolites, rather than a lack of energy, per se. So that's, again, the metabolic stimulus. And the other version of that which could be subdivided into two components, is basically what we refer to as just a mechanical stimulus, a mechanical tension. And this goes back to what you're saying earlier, you know, a lot of novelty, not necessarily great. You know, we have a lot that we can draw from already pre existing literature and in practice, and so many so many people with with fantastic experience. But I did also want to go into the more novel realm, because right now, I think that we're using about a third of our maximum strength when we're training even even when we're, we're doing heavier loads, and I appreciate that Sounds like hyperbole. There's nothing metaphysical. Like, I'm not saying you're going to get 200% more strength by tapping a hidden light inside of you, or they know that it's just physics and physiology. So explain that.

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Dr. Mike T Nelson 35:15

So how, if we're only using the third, what would be something we can do to increase that?



35:23

Yeah, so this is something I go into detail about in the book, because it comes back to a fundamental misunderstanding that we have about strength training. And this is not i'm not pointing fingers, it's not criticism, I think this is our biggest opportunity. For gains. I've never seen anything this massive, when it comes to an opportunity to change the way we look at training, I think I barbells, dumbbells still going to be our bread and butter. We're not getting rid of that. But what if we find something you love, there's a different way to look at it. And it comes back to a very commonly misunderstood concept called the force velocity curve. And I screwed this up back in 2003, very publicly 40 nation. And I publish the idea that the force velocity curve shows that when we do very slow e centric or negative movements, we're exerting more force. And turns out, this is a common misunderstanding. In fact, when I worked for the nsca, national strength conditioning Association, I have the opportunity to kind of quiz will say, over 50, strength coaches and

personal trainers, and I found that more than 96% of them got this fundamental concept wrong, just as I did. Now, consider that this is impacting every single rep that we do. If we're misunderstanding this, that's a huge opportunity for improvement. So you can take the quiz yourself, and it's two part quiz. Question number one, are we stronger during the positive, concentric contraction, or the East centric, negative part of the contraction? And everybody gets us right? We are stronger he centrally, we noticed. Second part, when we are training, do we exert more force on the con centric or the East centric? Now before you answer, but just do a quick walkthrough, so let's say it's Monday, and you managed to queue up and get your benchpress to do your weekly sets. And you're starting off with a nice light load 100 pounds total on the bar, and you want to do this experiment, starting off at your chest, that you're supporting the load with your musculature. 100 pounds pulling down on you bars not moving yet. How much force Are you exerting? Well, if the bars are moving, it's got to be 100 pounds, right? So equal resistance. This is what's what's called isometric contraction. Now you want to press the bar up away from you perform that concept, how much force Do you have to exert? Well, 101 pounds, anything over the 100 pounds that's pulling down on you, you press the bar up, now you're at the top, you're at like 100 pounds pulling down on you bars not moving, how much force you're exerting. Once again, 100 pounds, because it's isometric contraction. Now, this is where it gets sexy, we're going to perform the East centric, the negative, get back down to our chest. And because we are stronger East centrically, we are going to exert more force. But wait, we're already at lockout, how do we exert more force, if we could exert more force, the bar would go up, not down. So in order to perform that negative to get the bar down to our chest, we have to exert less force. So this is what I refer to as the east central paradox. We are much stronger, essentially. And yet, we exert less force, and we do it on every single Rep. Now, this has massive implications for muscle strength, muscle growth, and by extension, fat loss. So if you want we could play with this idea. I mean, there are certainly FAQs when I first tried to conceptualize this, I was like, No, no, I really fight me centric, like I really slowly lower the load. So that's common thinking, and that's part of the misunderstanding. Anytime you're slowly lowering the load, what you might think of is yielding because essentrics are commonly known as yielding rocks. You are exerting less force than you do concentrically Nowhere near the amount of force that you can exert he centrically on the negative.



40:06

So, again, I it's hard to convey the magnitude of impact, we can exert 200 more 200% more force right now. Like, you can go to the gym and tap into this right now, we just don't know how. And I mean, even more fundamentally, we didn't know, we were capable of this and we weren't doing it. Like I said, I got this wrong, too. But what happens when we do tap into East centric overload training, when we actually try to contract constantly, but

we are overcome, he centrally it takes some learning to do, because we have taught ourselves to give into the E centric, every single rep we have ever done. But also every step we have ever taken in our lives, we are just used to giving in on the east centric, and really emphasizing the effort on the concentric. That's where the real work, real work has to come in. Right. So that's why we tend to think of eccentric is almost a convenient rest between the work of concentric. So I know it's a mouthful, to say the least. But that's that's the fundamental concept, which again, I I'm putting my reputation on the line, I think this is the biggest training innovation that we've had in decades. And I'm not claiming responsibility for it. I'm just really trying to get the concept out there.

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Dr. Mike T Nelson 41:38

Yeah, no, I think that's, that's awesome. Because I think that's still something that is very misunderstood. And, you know, part of that, like exactly mentioned is, you're sort of working against and with gravity. And because of gravity is this like, all present thing we've been exposed to 24 seven our entire lives unless we go to the moon, or I know you've worked at NASA and go into microgravity. But it's easy when something is a constant to just forget that it's there, right? Oh, this is gravity. Right? So like you said, by definition, if we're working against gravity, we're pushing something away, we have to exert more load when we're kind of using gravity, so to speak, we're doing less work, like gravity is just taking over. Like if I throw a ball in the air. Once that energy is all dissipated, it just comes back to Earth.



42:35

Yes, Oh, go ahead. Sorry. I was just gonna say it's one of the challenges is not just understanding that we are missing out on this potential, it's actually executing it. That was my next question. Oh, perfect. Yeah. We don't know what it feels like to be overcome by load, and, you know, to fight with everything we have against it and still be overcome by that load. Because if we've ever been in that situation, we've probably been more concerned about our, you know, survivability at that point, because it may feel potentially dangerous. But obviously, we want to take steps to get rid of any potential injury risk when we're actually using essential overload for training. So this comes back to what I was saying earlier about really getting to know how your muscle contraction fields really getting your head inside of the muscle contraction. Because if we are just throwing around weights, which everybody does, okay, so not criticism. But that's our thinking, then we are never going to be able to apply East centric overload and really get the intended benefit. Because I got to tell you, I've been doing this for years. And I still find myself occasionally, during an East centric overload rep, I will find my mind just not not quite being fully

present. And I will be exerting force, like a lot of force on the load. But my head is not in the rep. I am not fully trying to contract concentrically. So yeah, I feel like I'm pushing. I'm not trying to contract concentrically and then being overwhelmed. It's it's, it's a skill. And it's a skill that is counterintuitive, because again, it's not gravity we're not giving in we which we have, again trained ourselves every single rep we have ever done. But it takes some time to develop. It takes time to develop for every new movement that we do it with. But the gains are worth it. It's it's definitely the best way. I mean, if I told you you could, you know, instead of using 100 kilos on your bench, if you could use 200 kilos and handle it, you would say oh yeah, it's probably a better stimulus, you know, fully safe. Probably a better stimulus for growth and strength. Right, like I think our instinct carries us that far. So now you know you actually have that strength, you have more strength than that, we just have to use it concentrically. So the ways to do this, again, I go through this in the book, try to kind of walk through because it's a skill, it's not only kind of mind blowing concept, but it's a new skill that we have to learn. But the best ways to do it are going to be will say, try to eliminate as much gravity load as possible. Now, I know probably the most intuitive exercise we could do for the central load, probably a barbell bicep curl, or heave the bar up and Yo, slowly, Lord. Remember, if you're using the correct load, and you're really taking advantage of eccentric overload, you're not slowly lowering a damn thing. Okay, you're fighting with everything you can to get that bar up. But it's just, you can't do it. Right. So not necessarily the best exercise. So it's more, okay, this, I'm aware that we're going to do it. So I want to address that, rather than just pretend turning a blind eye and pretending we're not going to do it. So the best ways to mitigate potential injury risk for that one, make sure you do it when you're fresh. So you have your core stability, you have your shoulders active, so everything is ready to fight this negative, even though just a biceps exercise. Secondly, rather than looping the bar up, like we're trying to do a concentric, treat it more like a clean. So use your hip drive, use your leg drive, to quickly get the bar up in a vertical bar path and drive your elbows underneath to catch it. Now, so



Dr. Mike T Nelson 46:51
do a horrible palms up clean.



46:56

That's good. And lastly, this is a technique, going back to the personalized anatomy, something I called the shoulder lock technique. And it's basically an anatomical arm blaster, where you have your arms in front of you for the curl, and you dig your arms into your sides. So your arms, once again, stabilized, shoulders stabilized for the movement, plus you're digging your arms into your torso, so your core is not going to give up any kind of movement, it is going to stay locked. And by creating as much stability as possible,

you're then able to focus on the eccentric overload, you are able to focus on trying to contract concentric, but be overcome with the negative. How's that sound so far,



Dr. Mike T Nelson 47:54

I like that, that's good.



47:58

Another one, let's jump to the opposite side of the arm, triceps, a great way to do this is elastic resistance. And, you know, maybe familiar with bands and chains, which are commonly known as accommodating resistance. Now one of the things I find it's fantastic, it's cool, you'd never heard of it before. But I've never seen anyone talk about the different types of accommodating resistance. So in the book, I go through the three different types of which bands and chains are one that is called spatially accommodating. And that means typically, the way they're used is that the load tends to increase. As you move from the start of the concentric throughout the range of motion to the end of the concentric or peak contraction, the load tends to increase. Okay, that's spatially accommodating resistance. So the way we can employ that is to hang a band from overhead and use two hands to stretch it with just a triceps push down is called the two up one down technique or in this case, you know, two down one up technique. But the idea is you're using both limbs on the concentric to get to that exaggerated eccentric portion. So maximal contraction, then you remove one hand, keep it hovering over the working arm just you know as a spot if you need it. And a single limb will perform the essential Okay, so the idea is that you are using a load greater than you can handle with one limb go into full extension, but you can handle the eccentric with one limb. That's the key to eccentric overload. Now there are two big wins for this One is that elastic resistance, probably the most common form of resistance that we encounter, that is not gravity. So it really helps show us what a non gravity load feels like, which, which is huge. And surprisingly different. You might you might get done, just a regular warm up set even and just, I feel weird in the muscle in movement, because maybe, maybe haven't encountered that type of resistance before. But the other bonus comes back to the great way to introduce a concentric overload training, as you want to start by using only the 50% top range of motion. So peak contracted down to 50% of maximal contraction, you do not want to go all the way to a fully lengthened position with your eccentric overload. And the reason is eccentrics can't be damaging, which we're actually after a little bit of right. It's it's a structural stimulus, to build muscle and strength. But we need to be very, very careful about how much damage we're inducing, because the greater the lengthened position, under a central globe, the greater the damage. And right now, if you're not used

to handling the central, which we're not knowing, no one is, and that's, that's such a fantastic opportunity, it's exciting. But you want to be very careful about how you introduce it, whether it's yourself or with a client, from experience, do not make a client too sore. I mean, they're not going to like you if they're late to the bathroom for the next four, four days. So start with the top range of motion. And this also comes back to personalization, get a feel for how your body responds to it. Because there's, I can't think of anything else that is what's called more idiosyncratic or individualized in terms of a response. We all respond very, very differently to East Central contractions and the damage. So there's no one size fits all prescription. Some people get very inflamed and very sore, some people have to work very hard to get sore. But we can't know until we test it out. So you want to start off with what to do less, then you could just to feel what you experienced in the coming days, if you're really sore, then probably a good thing, you didn't go too far. But it's better to go lighter than to go too heavy. And the benefit of using bands for this is very organically, they give up a lot of resistance in that fully extended range of motion. So you don't even have to think about only applying maximal force for the peak contraction phase. Bands just do it themselves. So I'm gonna take a breath here and yeah,

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Dr. Mike T Nelson 53:01

no, that's good. I mean, I think like the two one or one two technique for standard equipment, and if people can just take that principle and wrap their head around it, I think they can get pretty far with that. And I like the partial range of motion to because everybody's done. Adding the centric work in and done a little too much. I did that in college, like, I was like, oh, calf training. So I read this article and some, maybe it was Muscle and Fitness, I don't remember and thought, oh, I'll just start doing this. And it was a lot of pauses, egocentric way more volume than I was used to. And I felt Okay, walking out of the gym. And then yeah, I was sore for over two weeks. Like you forget how much movement of your foot and you need to go up and down stairs and I lived on the third floor downtown. I'm just going to talk at that time and Holton. So like going up the stairs like a penguin of the pole stuck up my ass and yeah, every movement just walking around. And things you forget to for stability, like when you squat, your calves are still working surprised they don't turn off like even like squatting in the gym was painful. And I'm like, why is this like even bench pressing? I was like, oh, because I have to hold my foot in that because you know, like you forget like how often smaller muscles are used until you do something stupid like I did. Or if you're been injured.

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54:34

Yeah, it's a constant reminder, right? It's so heavy. If you do this with a client, they are

going to have a constant reminder of why they should be pissed off at you. So just know Be careful with that.

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Dr. Mike T Nelson 54:47

Yeah, although a pro if you are a trainer and you can make a female's abs and glutes sore, they'll probably sign up for like four years with you. But yeah, that's Yeah. No, I like That, that I've been super fascinated with the kind of the essential portion overload. And I keep, I guess I keep waiting for this to become more mainstream. And it's not really yet like I keep thinking like every year like this is gonna be kind of the next big trend and it does kind of sort of gets there and then disappears. And I think part of it is like, you have to do different techniques like you outline. And there is a place, I think for some specialty equipment. And if you've ever used like an AR x machine, or this kind of constant movement of first time ever used, that was a paleo effects years ago. And it's this. So imagine if you're just doing like an old school leg press, but imagine that the leg press was on, like a pneumatic drive, or it's just moving. And you can put little sensors in it. And it can tell you basically how hard you're pushing into the plate. So what's cool about it is that you can specify the rate and no matter how hard you're pushing, you're still doing things different. But what's great is when they show you the output live, now you have this, like additional feedback of exactly what you said, because when you're doing like longer essentrics like that, it's so hard to sort of stay in the moment, like every part of your brain and your body just wants to check out of the whole process. But on those machines, if you can see like the feedback like oh, yep, you checked out, they're like, oh, oh, try to hit this number again. So it, it having that live sort of feedback, I think is super essential for progress and just motivation doing it. And then there's even newer machines, like I don't know if you've seen the new 1080 machine that they have. So 1080 was typically used for sprinting, they had a little tether cord, where you could do all sorts of different resisted sprinting moves. But they took the same concept now and they put it into a machine. So I was at was hanging out with Cal Dietz a couple of weeks ago at University of Minnesota. And they've got two of them, so I got to play around on it. And it's crazy, because you can do exactly what you said, I can set how much load I want on it on the way down, and then it will record how hard I'm pushing against it. So I don't know what they said it I said, I'll just play around with it. And I don't know what they set it for numbers. But then for us, you can fit on the way up, okay, that felt heavy. But then on the way down, it's so hard to be working against something that is literally just feeling like it's going to crush you. So they were doing really high percentages of concentric and East centric, and really emphasizing East centric loads. And he said so far, they've seen pretty, pretty good results with it too. And then I start again, you can monitor it, you can see how much force did they put in the bar. So you could do autoregulatory sets, right? You could say, okay, we're gonna go until, you know, 510 seven sets until we see a 10% drop off or however much drop off you want

and performance will quantify that as your, you know, essentrics stimulation for the day. And then, you know, do it again when you come back again. So stuff like that, I think is super cool. The downside is like one of those like a 1080 machine like that, I think is like 50 grand or something. So pretty expensive, but super cool stuff.



58:28

Absolutely. So I have a common solution that I think will help expose people to this type of East centric overload, using what you first described. So the AR x, which is a constant movement machine is computer controlled, and the resistance moves at a predetermined rate. whether or not somebody is pressing against it, or no matter how hard they're pressing against it. And the analogy I use is Star Wars Episode Four. Aboard the death star being trapped in the garbage compactor. The Guardian Packer walls start to close in on the crew. And it didn't matter how hard they were pushing against a wall. They're not going to be able to resist a garbage compactor, right? It is moving at a predetermined speed and it's exerting 1000s and 1000s of pounds of pressure. That is what's called ISO kinetic resistance. So same movement. And I got confused about this. At first I used to think okay, I'm going to do my bicep curl, you do a very slow movement again control the speed. So that's ISO kinetic, right? You know ISO kinetic is externally controlled speed. You are not controlling the speed you are only exerting force against it. It's moving whether or not you're you're on the machine or not. So, weird concept and especially weird because we have never experienced this before in regular lives, right? Everything is is gravity resistance. So when we start to encounter different types of resistance, it starts to feel kind of weird, but also very cool. So I was looking for a way to do this. And pretty much every commercial gym has an isokinetic device. But it's not the way you might think of it. Consider a machine in a commercial gym, that is computer controlled, you set it running to a pre determined speed. And it starts moving, whether or not you're on it. Think of a treadmill, a treadmill can be an isokinetic device. So the exercise I love using this is called the bar fly. And



Dr. Mike T Nelson 1:01:03

I know what you're talking about too. So I like the improvement on the name.



1:01:07

It's partially self deprecating, just you know, humor. The idea is to perform a negative pec fly the East centric of a pec fly. So you are on the side of the treadmill, you kneel over the treadmill, and you press into the belt, starting at maximal we'll say peak contraction,

okay. And as the belt is moving, it is going to push your hand in the East centric with the East centric movement, your goal again is to try to perform a concentrate. So your hand starts across your chest, and you will end the rep with your hand on the same side, every chest just like you performed a regular e centric st dumbbell x y, which should never do is is the worst exercise ever. But the idea is you can exert maximal force throughout the entire range of motion. And this is the second type of accommodating resistance that I call force accommodating. Because the belt or the resistance will exert force based on how much force you're exerting. So it's not based on range of motion like it is for spatially accommodating. It is how hard you are pushing that determines the force, you're getting back. And I think I'm the first person to come up with this idea that forces can be equal and opposite. I don't know if anyone in physics has come up with that before, but honestly, it's when Newton's law. Yeah, the idea is you want to push as hard as you can. And you are overcome, essentially.



Dr. Mike T Nelson 1:03:00

I like that I remember you showing that to me at a nsta conference like years ago. And I did it for a while and don't do like I didn't do a lot of volume. That's a bad idea. It'll be like really sore, but it works. It works really well.



1:03:16

Yes, it's interesting, because the research tends to reflect our traditional gravity based loading and training. So when people do East centric training, even e centric overload training, it's still a like a common set and rep scheme that you might find with just our regular concentric, limited reps. So it's definitely an area to to improve area of opportunity. What What is a rep, what is a set? You know, how much volume are we doing for the centric overload, these are all things that need to be figured out. But you typically don't want to do just consecutive repetitions like we do with regular training. That's that's going to give you that balance between metabolic fatigue and structural damage for stuck structural stress. That's it's a good balance that we're always going to use. But if you're doing forced essentrics, don't worry about the metabolic stress stimulus. So do a rep. And then pause for a minute because you're exerting a lot of force a lot of effort. So take a break five seconds, 10 seconds, it doesn't matter, because the next wreck you are going to do needs to be that maximal effort again. So you really need your head in the game you need, you know, need to mitigate fatigue while you're doing that, because it's not about that metabolic stimulus. Now, the last thing I want to emphasize about this is that again, fitness industry, hyperbole nonsense. I mean, barflies is just a idiotic gimmick so I can get my name on the exercise.



Dr. Mike T Nelson 1:04:54

There you go.



1:04:56

Well, it might be. It's there. It's really just tapping into your physiology. And it's not about you hovering over a treadmill and flapping your arm. That's not the point. It's so much bigger than this. It is about understanding these stimuli for muscle adaptation, muscle growth, and how do we get that tapping into 200% more force that we have right now we're just not using, we need to figure out how we can do that, to get the biggest bang for our buck. So thinking differently about resistance, thinking differently about things we see in the gym or in everyday life? How can I use the XYZ to get some kind of overload, eccentric overload, we need more people doing this. We need more and more devices available that people can readily use. And my final point, which I love that you brought up the idea that right now eccentric overload, it hasn't been converted mainstream yet. So we're still in the early adopter phase. Yeah, in 50 years, the way it's going yet, it'll be pretty common, or at least very well understood. I think the exercise that's going to help change everything is the Nordic leg curl, then the eccentric leg curl that is used by so many athletes and so many strength coaches, because it is shown to mitigate potential injury risk for athletes run. So it should be ubiquitous and strength, strength conditioning for those athletes, but I think it's really going to help usher in an understanding a greater appreciation of eccentric overload. Yeah,



Dr. Mike T Nelson 1:06:44

that's a great one. That's if anyone's tried doing Nordic curls there. Yeah, they're quite challenging. Even the assisted version, so great exercise, for sure.



1:06:57

Absolutely. Yeah. And it's, it's a big conversation used to be like, Hey, isn't this dangerous, like eccentric overload on your hamstrings? That's not good. But even, you know, five, six years ago, we we had a decent amount of research literature, showing that it can actually mitigate potential injury risk. And the research is just now mounting and mounting. And we've been, there's so much research, that it has been evaluated. studies that did not show a protective effect have been evaluated? Because the common understanding is yes, this will work to mitigate injury risk. But there are studies showing it doesn't, why do they not show that? And it turns out, well, adherence, athletes weren't actually doing it. So that's how much research we have on this is not just to eat I Oh, does it work? It's like, we

have so much we can dissect out studies that show it when it doesn't work. And we can figure out why they don't. I mean, that is that shows a very robust body of literature.

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Dr. Mike T Nelson 1:08:06

Yeah, that's awesome. Everything about just in general, what the hamstring is doing, which again, is a gross oversimplification. But if we look at the hamstring, just across the knee, it's basically one of the main de celebrators that's preventing that shear stress in the knee, right. So if your hamstrings are weak as a kitten, your odds of blowing your ACL in my biased opinion are going to be much higher. And that may be why we see more in females, again, as a whole bunch of other stuff that goes into that with angle, the pelvis, and potentially hormones, etc. But just all athletic motion has a very high deceleration component, which is primarily more on the east centric end of the spectrum. And I think you know, from some of your work and other people, we've gotten a much greater appreciation of that and started training that more. So hopefully, we'll start to see a decrease in kind of non contact injuries. So yeah, very well. So do you like flywheel type training like the essentrics and I know that there's other flywheel base devices coming out in the market. So it seems like there's maybe a more resurgence in that area, which should promote more of a e centric type emphasis.

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1:09:24

Right? So you are exposing a very painful elements my life so I'm probably going to start crying this out, don't worry about it. Like I have never used a flywheel for E centric overload. And I am dying to do it. I have been just engrossed in that research for years and writing a separate e centric book. Yeah. And oh, I love it. It is fantastic for a central overload that have all the theory down. I have, I have different ways to do it. But Mike, I've never used it. So please share your experiences.

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Dr. Mike T Nelson 1:10:05

I think if it's setup correct, and it's a good device, I've only used it a handful times here and there, you know, it's on my list of potentially get it. At some point, like, I don't have enough equipment jammed into my garage or metabolic stuff. But it's weird if you've never used it, because when you get the right setting, and for people listening, if they haven't heard of what a flywheel is, is literally a wheel that spins and creates inertia. So if I'm doing, let's say, a squat, and I've got a body harness on like a belt squat, as I'm coming up, I'm creating more force that's pulling against it. But because that wheel is spinning, I've got like more force that's inertially being driven, it's wanting to pull me down. And so again,

you can get on it and do it and just kind of like, you know, fall like a dead fish. And you're like, I don't know why like flywheels are that useful. But if you try to do it, and slow down that movement, again, because the load of the force, I know, I'm bastardizing, these terms for people listening to physics, people are gonna lose their mind. But it's just ripping you down. And so to try to counteract that, again, it just feels so different, because we're not used to it. But I think especially if you're training athletes, or I think of myself as I'm getting older, what are some of the, the functions are easy to lose with just general training? You know, one of them's obviously, speed, and I think the other one is higher East centric type of loading, right? You think of injuries, if I get dropped out of the sky from 20 feet near kiteboarding, I'm going to have a massive amount of East centric load that's applied to my body. Right? So maybe if I can try to do a little bit more of that loading, and maybe I can hedge the, you know, decrease the risk a little bit. So I think it's useful for that, obviously, it's good for athletes, you know, deceleration training and that type of thing. But, uh, yeah, it's definitely, it feels different. So I would encourage you to give it a whirl, whenever you can, I think you'd enjoy a world where we're all caught that messed up.



1:12:15

I've actually been wanting to talk to you about about this for a while just because of your engineering, education background, but your mindset. So I think, yeah, I feel like, you know, maybe maybe a different discussion that we'll have, I think we could go to town. But just let me know what you think about this real quick, the best analogy I have heard for a flywheel is it's like a yo yo, throw the yo yo down, it keeps spinning because you have put energy into the system, just do you put energy into it, and then just have to flick your wrist. And that energy wants to reverse. So that's how the yo yo climbs back up the string. So it's, unfortunately kind of the opposite, in turn, right? Like a flywheel squat. So you start at the bottom, you squat up, you're putting energy into the system, like the Yo, yo, you have a flywheel underneath that is spinning, because you put energy into that, well, how do you take the energy out, that's where you do the East centric, and just like the yo yo reversing to climb up, the flywheel will then you know, the cord will reverse motion, and you will then take energy out of the system during the East centric. Now, the trick I heard with this, is that when people are used to regular strength training, they will do the concentric, just like we will add, that's where our effort goes. And because we're used to giving up the East centric, people just give up the East centric off. Yeah, I will. But guess what, you still have energy that's making that flywheel spin, it's still pulling you down. So you can't just give up and relax on the negative otherwise, you're going to be like pulled down further right? Like it's you have to exert as much force as you did on the concentric which already is greater than we do with regular strength training. But it's a it's a conscious effort that needs to be had to make sure you don't fall on your ass, basically.

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Dr. Mike T Nelson 1:14:24

Yeah, yeah. And another version of flywheel training that's a little bit maybe more accessible to people is like the concept to stuff right it's our concept to rower and erg is a flywheel. They have a bike that's a flywheel they have a skier and it's another way of kind of getting attics. If you've ever used a rower before especially like the concept to ones you know that you can pull and not create as much force. But there's something about having that average wattage that you're staring at that gives you that immediate feedback, right. So again, your whole point about Just trying to mentally stay in the game, if you're rolling a 2000 meter, and I want to hit whatever x average, you know, 270 watts. And even if you're pretty well trained, it's so easy to be like, I can just put in a little less effort and I, I hit like 250 to 40. When you're right on that edge of the fastest you want to go, if it's an all out test, it's a mental battle the entire time to stay with it. Because it's a flywheel, you have to create power each time you pull in order to get the watts to be where you're at. And so it's almost like it's a different thing that you're training your body each time, it's like kind of going on, and then a little bit off on and then a little bit off. Where if you're not doing that, it's just like, say, a bike. It's more of a constant type for the entire time or running. It's just, yeah, it's a different field for sure, especially as you start getting up in in higher wattage with it.



1:16:06

Yeah, that's fine. You just revealed to me that I not only see you as the Matt flex guy and the HRV guy, but you are the erg guy to me. I think about what you post, like seeing your wattage and you your averages and peaking. Its interest, I didn't actually make that that connection until you just said that.

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Dr. Mike T Nelson 1:16:27

Well, thank you. You can blame my good buddy, Dr. Kenneth J. For that I got into rowing from him, basically, and the karega Institute and people are like, Oh, you must love rowing. I'm like, not really, I don't really like it that much. To be honest. It's a hideous machine. It's horrible. You know, but the transfer is just so high. And there's no impact, you're creating power, you're creating speed. You know, the cardiovascular component is very high, but doesn't appear to interfere with weight training, because it's a slightly different stimulus unless you get really crazy. And I think there's just something about having that power output that stares you in the face all the time. Right? It's like you automatically have a very good quantification across a wide spectrum of biomechanics and abilities that you just can't really run from that. Right? Again, there's, there's some if you look at elite rowers, yeah, they tend to be much taller, they do have different

anthropometrics to be an elite rower. But we could put a short person on and we can put a tall person on, and the power they create as a power they're going to create, right? So for you, as an individual almost kind of normalizes a lot of other factors. And then being online, I can look at their log and know exactly where they're at. Right? Because it in one hand, it's simplistic, right? You've got your average power that tells you pretty much everything. So the only way to get better, is I can move the thing faster, like so frequency, my strokes per minute, or I can create more force per stroke. That's about it. Right? So you're also very fixed on what you can do with it. So very cool. Yeah, like that breakdown. Yeah. Yeah. two last questions for and we'll let you get back to your normal day. For metabolic stress, do you think hypoxia plays a role in that? Or is that kind of like the main principle that's driving everything below it? That's such an awesome, that could be a podcast in and of itself.



1:18:37

Yeah. I know, just to, you know, for the sake of maximum fidelity,



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the



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idea of metabolic stimulus for hypertrophy, it is still a scientific theory. And there are plenty of studies that show that it doesn't exist. So there's a discussion to be had there. And, you know, as with every other area of this, this very technical field, Dr. Mike Roberts has a fantastic review, specifically on the theory of metabolic induced sarcoplasmic hypertrophy is what it's called. Yeah. And it just, it's fantastic. But as with all great science, it raises more questions. So it gives us a nice overview. But in short, I think it's probably a contributor. But, yeah, as far as I know, I don't know. It's actually a very insightful question. Yeah, I'm just sorry, I can't offer more.



Dr. Mike T Nelson 1:19:44

No, that's fine. I love Roberts work. I got to talk to him again at ISIS and I talked to him there maybe for the first time maybe five or six years ago for whatever reason. We're like going to people the bar the one night so I just talked to him for like three hours and and if anyone's ever been He's one of those guys. Like, if you meet on the street, he's got this really cool Southern accent very laid back. And you're just kind of like, oh, okay, it's kind of

interesting guy. And then you ask him about any molecular stuff, your mind just gets blown. So I had a good talk with him, then Layne Norton at ISSN. And I was asking Mike Roberts kind of the, you know, the same question. I'm like, if this is the mechanism, then for training, would we do this type of thing? And he was super cool. He's just like, I don't know, man. I'm not Louis Simmons, like, I don't know, like what you would do for training. He's like, I can tell you, we think it's this mechanism. And that, but there's this other data that says this. And there's this data that says that this mouse model this that, that that you know, and so always super fascinating to talk to him too. And gets even more interesting when you get to that level of like, how many things really we just don't know. Right? We got data that we think this is what's going on, but I don't know.



1:21:02

It's muscle growth, like, yeah, there there is nothing more accessible to us other than blood, there's nothing more accessible to us, then just muscle and the the way that we can influence it, the way we can use different stresses. And we can study everything. And we have been doing this for decades. And we still don't know what exactly causes muscle growth. And that this may not sound like a big deal, which I mean, I'm sure I'm exaggerating. But the idea. It's important because I like to take the Elan musk first principles approach, and then break everything down through multiple dimensions to its simplest parts and say, Okay, what is really going on here. And then we can rebuild that back up into an optimized way, rather than starting off with sets and reps and gravity based loads, which is I go through all that in the book and what it actually means. But the idea is, if we understood if we had a better understanding of muscle growth, we could start with that basic principle, and then design training and stimuli around that. So I tried to take us as close to that as we could, as I could. But yeah, there's still so much to learn.



Dr. Mike T Nelson 1:22:18

Yeah, and the nice part is there's devices on the market like I have a Moxie device. It's nears, right. So near infrared spectroscopy that you can put over the muscle and determine you know how much you're loading on the hemoglobin. myoglobin, how much you're D saturated, and you're just stripping oxygen off. But even then, like I can put it on my bicep, but I can get measurements, when I can maybe drop my D set to 15%. Right, which means I'm creating a sort of semi hypoxic type environment. Yeah, but then how low Do I have to go? How long do I have to hold it there? How many sets? Would I have to hold it there? You know, even when we have a direct measure, which we can argue about how accurate it is or not even then, like the parameters we would do is we don't really know. And then if you remove that, and you go, Wow, like some people might occlude

earlier, some people might have different blood flow characteristics, depending upon their background, the recruitment, all this other stuff, it gets to be even more messy. So we're back to again, personalization type approach.



1:23:24

Nice. Yeah, like the way you connected those two, because that's actually how I started off the book is by introducing those two fundamental concepts, the personalization, and what reverse engineering or the first principles approach. So I tried to set the stage frame out everything I'm going to talk about. So it's not just any babbling is like, oh, there's a method to the madness here. So yeah, nice, nice connection.



Dr. Mike T Nelson 1:23:49

Awesome. last quick question for you, which again, could be in whole podcast on itself, do for the purpose of let's say arm hypertrophy? Are you bias towards internal cues or external cues? So for people listening, an internal cue would be Can I really feel my bicep working? I'm imagining I'm creating tension. It's sort of a feeling based or I did a deadlift, I really want you to feel your lats working at lockout or glutes or whatever were an external cue would be, here's the thing I want you to accomplish. Right? So when I curl I want you to pull your arm all the way up to your shoulder or an impress you know, press your knuckles to the ceiling. It's more of a motor programmed of what I want the body to execute.



1:24:41

That I've loved the the not just the question but your description of it. I think that's fantastic. insightful is always mine because this is a massive, another massive opportunity for improvement because the way that we typically train instinctively, we are focused externally, whether or not we know it, we just are, we focus on moving the load, how many times have you performed a hard set and thought, then just get the bar up, just get it up, just move the bar, and it kind of feeds into our ego as well. Because we can exert more force, it's a little more efficient to focus on the implement, like the bar. Now, if that's the only way we're training, which is most people, we have a massive opportunity by focusing on the internal component focusing on contracting the muscle. Going back to the example of a concentration, curl, the thinking man's curl, put your head inside the muscle, try to contract the muscle as hard as you can, just like your posing, okay, don't worry about the load, the load will move provided it's light enough, we hope it is. But by focusing on contracting the muscle, you're actually creating more of a metabolic stimulus. It's

inefficient, which is why we don't do it. But you're going to get bigger gains, especially if you've never done it before. So I advocate doing both the internal and the external. But most people, I've never done the internal Focus, focus on just contracting the muscle to move the load, it requires a little more effort, little more awareness of being in the rep. But again, it's a little more, it is more efficient, which is what we want to get that metabolic stimulus. So if you this year, right, another podcast, but it really helps to emphasize the idea, we are focused on the stimuli for growth. I don't care what your concentric determined, Lotus, hey, that's it, I tried to break it down in the book. So it becomes clear, that cool, we're trying to 80% of our one RM that's less than a third of our maxforce output. So you want it's cool, if you want focus on adding another five pounds and throwing it around. Cool, what are you doing? It's so you know, a third of what you can really handle. So it's not it's not impressive, you know? So and I guess I'm speaking to the younger me, who is driven, as I'm sure we all are trying to focus on the result, as opposed to what we look like for a few seconds in the gym, which is not impressive anyway. So if Yes, sir, we can we can pull our ego out of it, the better will be for terms of getting massive muscular arms.

D

Dr. Mike T Nelson 1:27:51

Yeah, I've gone back and forth on this quite a bit. I my bias right now is, most everything I do with clients is more external focus. But again, most clients I think, are not 100% on hypertrophy. And I'm always thinking about what is the cost to their movement as a human being on top of everything else, because they're not a professional who's getting paid only for hypertrophy. So to me that I have to consider the potential risk of injury movement, what else they're doing in their life on also some of the loads are using I think, are probably lower than what they could. So I think they're still missing out, like you said on some of that mechanical tension, just because their strength could be a little bit higher. But again, that's always a trade off too. Right? Like how strong you have to be before you can get bigger. But what I've noticed in general, even with natural athletes is the ones who are bigger, almost across the board are significantly stronger to you know, there's there's outliers to that, even on a professional level, like you talk to even people that they use drugs or not. A lot of times their performance on certain movements was quite good early in their career. And they kind of gravitated more towards exclusively hypertrophy, internal type focused training and saw much more results from that. So I always wonder then, too, if, like you said, their training the thing that they weren't good at, because maybe they were more blessed genetically or whatever, on the external cue performance side, but that wasn't their goal. Their goal is to do something else. So they are almost like a hyper responder to the opposite thing. Yeah, so anyway, that's where my brain goes. And I do think that potentially if you're doing a high stability exercise as like a preacher curl concentration curl. I will agree that maybe an internal cue may be useful there. The

general framework though, is I'll take An external cue. And then once they're done with the exercise, then I'll ask them, what did you feel. So to me the feeling the sensation is a byproduct of an external cue. And if I don't get the sensation that I want, I'm going to look at a recruitment pattern or I'm going to try to take biomechanically in bias that even more in the direction I want. And that generally is by adding, like you said, stability. So it may end up in order for you to, quote, feel something, you may end up doing a highly braced machine type exercise to know what that sensation then feels like. I guess, I don't know if I'm making any sense at all. Absolutely. Yeah. This is gold guy. I love this. That's Yeah. Because I'm always thinking like, Can I hit come to the middle of the road? Can I maximize the amount of muscular tension and as a byproduct still get some of the metabolic effects? Right. So someone says, Hey, you know, I did dumbbell bench presses and all over feels my shoulders hurt, I never feel at my packs, I never get a pump. Okay, maybe that's not the best exercise for you. Maybe recruitment pattern is off my biases, I'm gonna change those things and still use an external cue approach first. And then if we have to get all the way down to doing a seated cable, press out first, to bias you more on an internal based highly stabilized exercise, then maybe we'll do that. But in my brain, the goal is, eventually I want to get you back to something where you can move a lot of load, get that overall mechanical stimulation, because to me, I think that's limiting more in people, and harder to get than most people, if you give them enough stability, and you just really limit the range of motion. They can normally feel a muscle working, but I don't find that the opposite is always true. And interesting. They're kind of reducing.



1:31:58

I would say the opposite. I would say that interesting. To to focus on something that's really inefficient. For us, that's almost like fighting instinct, right? Especially when we're in the gym. And we're just being you know, meatheads that, you know, we're all are sometimes we're going to do what is most efficient, so we can move the biggest loads, especially because we are so load preoccupied when it comes to progression, for example.



Dr. Mike T Nelson 1:32:25

I agree with that.



1:32:27

Yeah, so it's, it's, external cueing is fantastic for strength. But when I find most people have to be just like that, my experience has to be taught to the inefficient by focusing on the

contraction, to squeezing the muscle to perform the movement. But the other benefit that ties back to the eccentric overload, I find that only when people can do both. Can they really focus on fighting the instinct to just passively resist the center? Yes. When they understand both what it feels like, internal and external, then they can really focus on trying to contract concentrically while being overcome ease centrically. So it's this one more, one more ease? I just, I love your insights and experiences. Yeah.

D

Dr. Mike T Nelson 1:33:27

Yeah. I mean, I think for people listening, they might be like, oh, they're saying two completely different things. But I don't think it's really that different. Right. So dumbbell bench press, again, like most people, I would queue them and be, okay, you want to accelerate the dumbbell as fast as you can up. But I don't want the dumbbell to fall so fast, it's hitting your chest, right, because everyone's seen those people who go to the gym where you can see someone move a load fast, and it can be controlled. And you can see someone move a load fast, that looks horrible at the same time, right? And it's just kind of a thing you, you notice, and so I don't even know if like, rep speed is a biggest indication. But ideally, I would like someone to move fast or have the intention of moving fast, but yet controlled. And normally, when I find that they're able to do that a side benefit is they can actually afterwards feel the muscle working at the same time, where if you see people just kind of flopping all around, like, Hey, what did you feel after that? I don't know. So, I mean, I think we're probably speaking very, very similarly. The thing that I try to get people to avoid is, if it's a performance based movement, I don't want them to be too into their body because I want less sensation, not more. And so I think there's a given take with that and based on their history, because if you go purely performance, you said okay, the best deadlift you've ever had in your life. Did you have a lot sensation are very little. Most people are going to be very little. Right, which I think is the goal for fear performance. Now, you could argue if you go pure hypertrophy, we don't care how well you move, we just want the most sensation to activate the most amount of tissue. Again, what is I think the costs associated with that and maybe movement quality and potentially pain and other things. So I think you're always trying to find the spectrum of what's going to be best for that particular athlete who is in front of you.




1:35:31

Yeah, I love the ways that you real quick you you triggered a quick story that I share in the book with regard to the performance. And what did you feel? There is a powerlifter by the name of Matt winning, who? Multiple world record holder. Most muscular hands in the world.

 Dr. Mike T Nelson 1:35:51
Great, guys fans are scary.

 1:35:53


Yeah, it's definitely I name an exercise after. But he recounted that the first time he squatted 1000 pounds. He felt his femurs bow, yeah, the largest and thickest bone and it bowed. And he thought to himself, alright, either I'm going to die a horrible death, or I'm going to be 1000 pound squatter. And he went after it. And God It says, just just a crazy perception. I can't imagine how disconcerting that would feel. I mean, swine, 1000 pounds alone. But yeah, your femurs bowing, and then just pushing through the mindset that that takes is incredible.

 Dr. Mike T Nelson 1:36:39

Yeah, and last thing I'll wrap up is, if you can ever find a high speed video film of people doing like breaking boards, and cement and stuff, if you can find it, you'll see the bones actually do flex a little bit, which is crazy, because the bones actually do have a, I wouldn't say a high amount, but they have more elastic properties. And when people realize, and that's an issue if you make an internal bone fixation, because you'll have stress shielding around the spots that you embrace. Because the material is stronger and tends to be a little bit more brittle. So the bone around it will tend to want to decrease because there's no stress in that area. You've offloaded the stress to a slightly different material. So over the years, they've tried to make like the elasticity and all the other properties, Young's modulus, blah, blah, blah, blah, all this stuff to try to match a bone because if it more similarly matches, you're going to have less stress shielding around it. And again, these are people who tend to not lift and load it and that type of thing. So yeah, that's Yeah, I can't imagine doing a load refill your femurs like moving is awesome. Well, thank you so much for all your time. And I know the book is out via Human Kinetics, and where can people find it? And where can they find more about you

 1:38:00

can go to my website, which is armbar, calm with two R's. And my youtube channel is where I post most of my material. And as David armbar on YouTube,

 Dr. Mike T Nelson 1:38:14

awesome, and your YouTube stuff is really good, I would highly recommend people check

it out very entertaining, but also very research based, very useful stuff, which I think is one thing I enjoy. It's another thing to no one really wants to hear like someone reading abstracts. They want to know you put in the time and effort that you've done that, but you're like your videos, you're presenting something that's entertaining, and also very useful at the end of the day, which is excellent. And I really enjoyed those. Thank you so much. I appreciate that. Yeah. Well, awesome. Thank you so much for all your time today. And thank you for doing the book. And I would highly encourage people go out and get it even if arm training is not their number one thing, you can take literally the same principles and apply them to your training. So even if arm training is not your deal, I think you'll still get a lot out of the book too, which makes it even more useful. Thank you so much, sir. Appreciate it. Cheers raise the bar. That's right. Thank you so much for listening to the podcast. Again. Huge thanks to Dave bar for coming on. And make sure to pick up a copy of his book. I know how much time and effort he has put into this over the years. And you can literally pick it up at a cheap rate. Like to me, books are crazy cheap for the amount of information that you can get out of them. Anyone who writes a book knows how much time and effort goes in to doing it especially through a publisher, all the hoops and everything else. And the fact that I can go to whatever my favorite bookseller is. Pick up a book, very cheap and get all of that wisdom to me. is still pretty amazing. So check out his book and all of his information. Big thanks again to Dave for coming on the podcast always great to talk to him. And make sure to sign up to the flex diet certification of all learn more about nutrition and recovery. We cover everything from protein to sleep to micro nutrition, carbohydrates, fasting a little bit on the ketogenic diet. A neat and we also have interviews from eight expert researchers, everyone from Dr. Stu Phillips, Dr. Jose Antonio, Dr. Eric Helms, Dr. Dan party, and many more, go to flexdiet.com fldit.com. That's flex diet, FL dx dt comm there'll be a way to get on to the waitlist, and in the upper right hand corner, sign up there, you will be on the free newsletter. And I will notify you the next time that it opens, in addition to getting lots of great information there. So thank you so much, really appreciate it. As always, if you can subscribe to this podcast, through iTunes or your favorite podcast app. That really, really helps us out a lot with iTunes. The main thing that appears to drive rankings is subscriptions. Always leaving whatever stars you feel is appropriate and any comments as always greatly appreciated, too. Thank you so much. Really appreciate all of it. Talk to you soon.