

Paleo Solution - 258

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Howdy folks, Robb Wolf here. Another edition of the Paleo Solution Podcast. Very excited to have this guest with us today. He's a doctorate in Physical Therapy. He's a PJ which we're going to tell you what a PJ is and possibly the most challenging last name that I've had to pronounce on the show so far. Doug Kechijian, how are you doing man?

Doug: Very good. You know the pronunciation, I appreciate that.

Robb: Awesome, cool cool. And since we don't do any retakes on the show, I got lucky on that.

Doug: It can be Doug from here on now. That's fine.

Robb: Perfect, perfect. We'll go for that awesome. So Doug, tell folks a little bit about your background. You have a very eclectic and interesting background. And I think folks will find it very interesting in a lot of levels.

Doug: Yeah, I know. So, I mean I got a pretty exciting life. I wear two hats as you mentioned. One is the Air Force Pararescueman hat, the other one is a Physical Therapist. And you see these kinds of questions it's always hard

to talk about yourself. And what that really means is why you're here, why am I here talking to you.

And I guess I kind of started like yourself and probably most of your listeners, I've always been intrigued with human performance and the process of training and wellness. I've always really enjoyed the process of training not just kind of the outcome. Like to me just training for it's own sake was fun and I was always one of those people growing up like I wasn't really that gifted an athlete but I could always compete at a reasonably high level just because I worked hard and I was more physically prepared and that's kind of how I compensated for a lot of my deficiencies in that area.

And you know, I started getting really serious about training probably in high school. I had some great mentors who worked in my high school and the weight room and kind of showed me how to do certain things. And from there you go to college and it's like okay I've got to figure out what I want to do with my life. And I knew that I wanted to do something where I get to explore human performance optimization and sports medicine in more depth. And so not really having a whole lot of perspective at that point, I thought that the best way to do would be to go into medicine and apply to medical school and that kind of thing.

So I was pre-med, took all those prerequisite science courses, apply to medical school, took the MCAT's and even interviewed at different schools so I was pretty deep into the process. During different summers throughout my undergraduate education I would volunteer, intern at different places, different sports medicine clinics.

And at that time, I didn't necessarily think I wanted to do surgery, I wanted to do more primary care so I can see in a broader spectrum of patient population and maybe getting more into the wellness side of things, not just wait till somebody needs like a hip replacement then go and fix it. And even doing some of my primary care shadowing, I kept hoping that it would be better than it was and try to convince myself well maybe when...

Robb: Maybe it won't suck at the next place.

Doug: Well that's the thing as I'm sure you've kind of encountered the same thing. What I saw was still a very reactive medical model and even in

primary care sports medicine it's like somebody comes to you and they say their back hurts and generally what would happen is the primary care people are more sort of like the triage point like well it's either you go to the surgeon if something is really structurally wrong at once you know an invasive technique.

Or you go to a Physical Therapist and do the rehab and I wanted to have that more intimate relationship with the patient or the athlete and just focus more on the process and not just like okay, I'm going to give you an injection because I think your back is inflamed and you're going to be all better now. Even back then intuitively I didn't, that's all you think that was – that wasn't the approach that resonated with me.

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Obviously we need people to do those kind so procedures but it just wasn't really for me. But like I said I was still you know I have blind faith in the process. I don't know what else to do, I felt like being a physician would kind of give me at least legally the ability to do a lot of different things.

And so I'm pretty deep into the process. I'm applying to med schools and I graduated from college in May of 2002. So the Fall of my senior year was September 11 and obviously after September 11, there was a lot of focus media-wise on the military and I was introduced to a lot of different things.

I remember seeing this special on Air Force Pararescue and for the people who don't know out there, Air Force Pararescue is kind of the Air Force component of the special operations community. And their focus is more on technical rescue and trauma medicine so they have the same kind of capabilities as other special operation units as far as like sky diving and scuba diving and a lot of the physical challenge of it.

I kind of saw that and even at that time I was like there's no way I'm going to do that. But the more I read about it, the more it kind of intrigued me. And just because of my athletic background, I've always been just kind of fascinated by special operations training in general. But to me, the selection courses and the physical challenge and just kind of like proving to yourself you can do something really hard appeal to me more than the job itself.

But then when I found out about Pararescue, I was like okay. This job offer is the same physical challenge but with a job that to me I'm applying to med school so I'm like oh I get to medically treat people and at the end of the day I'm not a pacifist by any means. I think that there are certain situations where violence is the only solution. But with Pararescue I was like okay regardless of the political objective, I'm going to feel good about what I'm doing because you don't...

Robb: If somebody's hurt, you're going to be able to help him.

Doug: Right. Your job is to pick up that down pilot or injured service member, if you don't get to him first they're going to end up on TV getting their head cut off you know what I mean. So at the end of the day, you bring somebody back to their family. You could always feel good about the job.

So the more I researched it, despite being really deep into the medical school application process I was like you know what, I don't want to be 40 years old or whatever...

Robb: Easy there. Easy, easy.

Doug: Well, I'm really freaked there you know what I mean. I just don't want to be older and regret that I didn't do something.

Robb: Absolutely.

Doug: You can always go back to school and do those kinds of things. So I withdrew myself in that process and then the next thing I know I'm going through the whole PJ pipeline and it was everything that I thought it would be. It's been a great experience. The multiple deployments, I got to work with some really great people, been all over the world. So I did that pretty much like six years full time. The cool thing about Pararescue is they have a national guard reserve component.

So even when I joined the military initially, I didn't think that I wanted to make a career out of it. I wanted to get the experience and I wasn't sure how long I wanted to do it for at least full time. And the cool thing about Pararescue is they have the guard reserve units so even throughout my medical training at Pararescue, you do a lot of stuff in emergency rooms, in hospitals.

Our medical system is great for emergencies. It's like you get in a car accident, you break something, we can put the bone back together. If you bleed we can plug the hole and put blood back in. And I was like we're really good at this but even doing the traumatic emergent type stuff, I was exposed a little bit to more of the chronic disease side of things.

You're seeing these things and I'm like so much of these stuff is preventable and it's so sad that we wait till people need a new hip or they need some kind of hormone transplant and all these different things works like at that point all you're doing is really you're managing symptoms. You never going to fix somebody and it's damage control at that point.

So luckily because in college all you do is just take classes and you're like I think I want to be a physician. Being able to work with physicians in a hospital setting and see what really gets done, I was just like I'd rather work more in the preventive stuff than wait till that end stage and do damage control because I think it's accurate to say that our health care system is more about disease management than it is about preventing the disease. I mean that's...

Robb: I've been the charter of the National Institute Health is disease research not health research. We've had some challenges just getting- we've had some outside funding and then wanted some NIH oversight within this process getting some kind of Paleo-oriented stuff research and it's been turned down multiple times because it's not disease research, it's wellness research, health research.

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Doug: Exactly. So disease management and true healthcare are different things. They're not one and the same. And so I have that perspective and I knew at that point thankfully, I've been exposed enough to realize like medical school as traditionally done was not the right for me. And then I still have this passion for movement and exercise and wellness.

And you know I'm sure you get this question all the time, it's like you watch certain people like on the internet or in the public eye doing the kind of things that you envisioned yourself doing and it's like well how did you get to this point. And there's no formal academic program that's going to make somebody do what Robb Wolf does or what's going to

make somebody do like how I practice Physical Therapy or even some of my mentors.

So Physical Therapy in a lot of ways I was like well, it's a doctoral degree. You have some level of autonomy. You get great anatomy and physiology, training and biomechanics. And so from that standpoint I was like well it wasn't necessarily the best fit because the best fit would be like I'd educate myself, I just find different people and study but the law does not recognize that as an education.

So PT school was kind of like the least, worst fit. It's like okay I can do a lot of it. It's probably not perfect but nothing is. So I ended up going into PT school and I mean for the most part it was a great experience because I would not have had so many of the opportunities I've had if not for that education and just being able to do internships with certain people which is where you really learn, how to do what you want to do. I received that access because I was Physical Therapy student.

But even in Physical Therapy school the big thing that kind of frustrated me was that and I don't necessarily know if I have the answer to this because if you want to learn something complex like the human body which is an integrated system of multiple systems, you have to have some kind of reduction as element where break it up into its components and you study each thing individually.

So it's like with anatomy, there's a great thinker about movement, his name is Andre Espina¹¹⁵³, he teaches a bunch of Anatomy courses and Myotherapy courses. And he tweeted the other day it was like Anatomy as it's traditionally taught was the study of the dead, not the living. And so when you dissect a cadaver you take out all of the connective tissue which the connective tissue...

Robb: You spend a bunch of time scraping all the fascia so you can get down to the muscle and nerves and all that.

Doug: Everyone's talking about fascia and there's no continuity of bioflow where like there's this integration between systems. And the connective tissue system is a microcosm of that because nervous tissue, muscle tissue, tendon tissue, they're all made of the same components just in different proportions.

So if you were to look at your bicep muscle and tendon under a microscope, you would not be able to differentiate under a microscope the point that it would simply become a muscle and a tendon. It's continuous. And so we're dissecting the very thing that sort of puts all the sensory information to the brain, has this element of continuity and integration.

You have to know like okay this muscle attaches here and inserts here and it pulls on this bone like you need to know that but there's a cost of that reductionism and so it's the same thing when I took my clinical courses like it's broken down until you have your Orthopedic classes, your Neuro classes, your Cardio-pulmonary classes.

And I always thought like I want to work with athletes and do orthopedic sports medicine but even as an orthopedic therapist it's like I'll get somebody coming in with back pain and it turns out oh they're really stressed and they have an anxiety disorder and they have COPD and they can't get a breath of air out. And then you go into the neuro clinic like on my neuro rotation and it's like this person has spinal cord injury so we have to teach them how to anglelate in a wheelchair.

So now their arms and their legs essentially but meanwhile it's like okay they're doing essentially dips all day but their shoulder's in a wretched position but because we're a neuro clinic, we're not thinking orthopedically about what good position is. Then you go to your cardio-pulmo, you learn all these great stuff about how breathing influences all these different things in the autonomic nervous system but you never talked about how taking a breath of air can fix somebody's shoulder impingement if you even want to call it that.

So it's just like with research where everybody tries to be evidence based now and a good study by definition has to be reductionism, isolate the effects of everything except for the variable you're studying. The problem becomes alright, so your evidence base is all these studies but you still have to connect the dots and that's where it just takes the human being to think and connect the dots and there's no perfect way to do it. It's like the art of medicine or training versus the science of it. And that's like a PT school.

So I learned all these different disciplines but what's frustrating me was okay how do I connect the dots. So I was always searching for answers and then just through some of my different mentors, namely Bill Hartman and Allen Gruver who are my clinical instructors in Physical Therapy school. They introduced me to this discipline called the Postural Restoration Institute. And probably heard of it like diaphragmatic breathing is like this huge buzz word now. We can talk about what that really means later.

But the thing that the postural restoration institute did for me was, it connected those dots. There was nothing that they taught that was like unique in itself but it was like okay they took all the things I learned in neuro and orthopedics and in cardio-pulm and pieced it together. So it's like now, because there's no patient presents as text book. You never get someone who comes in and like my shoulder hurts now when you dig deeper like well just based on how you move. Like does your back hurt too when you squat or do you have a hard time getting to depth when you do a snatch and it's like yeah, how did you know. It's because it's all the same problem, where the pain and the symptom is arbitrary.

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And as a Physical Therapist, there's this huge movement within the field of pain science and trying to differentiate like pain science from biomechanics that's like it's all the same thing really because it's a system and at least professionally, there's nothing I can do to influence structure. Only a surgeon can do that. All I can do is get people movement options by allowing them to get into different positions.

So usually people would come in and they're stuck in this different sort of behavioral patterns. And those behavioral patterns can be adapted. And that's where it gets tricky because there's always a fine line between adaptation and pathology. If you're training a baseball player, the ability the baseball player to throw a hundred miles an hour is contingent upon structural adaptations that make them kind of freaks of nature.

So if you try to make them "normal" and take away those adaptations, it might not throw as hard. The problem is and this is where the art comes in, even in a sport the highest level of sport it's all about specialization. It's not about variability. So this is perception like elite athletes are really

healthy, it's the furthest thing from the truth because you know lead athlete you have to be completely adapted to do one thing very well, the highest level in the world.

So if we're talking about throwing a baseball, we want them to be adapted to throw a baseball but we don't want them to be so adapted and have so much specificity that they lose variability. So when they're not playing baseball, they can adapt to other stresses because we have to deal with the world even though our world is a lot different than it used to be in terms of the stresses that we encounter. We still need some variability to be a robust human being and adapt to stress.

And so when you lose that variability, that's when you become contingent on these patterns that are comfortable for you and adaptive but can lead to pathology and compensation. And so that's where like you hear about the heart rate variability, it's same thing as movement variability. You want variability to make you adaptable to stress.

But if you're playing a certain sport, you don't want so much variability that you're not adapted to your sports. Does that kind of make sense?

Robb: Absolutely yeah. Maybe an analogy there would be like a high level pitcher who wants to take their kid ice skating or something and the kid takes a dump on the ice skating rink and takes the parent down and they just kind of casually drape their arm not even to catch themselves but just to slow down and slide. And because the shoulder is so hyper specific to throwing a baseball, it's incapable of this extended position trying to decelerate a parent and a kid sliding on the ice at two miles an hour.

Doug: You nailed it. And the thing is you know we always talk about like there's this huge like functional movement, functional this, functional that. It's kind of a redundant term because anything that you do with it elicits an adaptation as functional. So you can look like a body builder it's like oh this guy is not trained functionally, he is on a machine trying to isolate his biceps. But if his goal is to get bigger biceps then his training is functional.

So any stress you put on the body, when you adapted that stress that was functional training. And it can be threatening to people to say like oh you've got this dysfunctional pattern. It's like dude, why do you tell me I'm dysfunctional? It's like all they did was what you ask their body to do. You look at like kind of how we are as modern human beings.

And it's almost a marvel that we are "dysfunctional as we are" because it means that our brains and our bodies are doing their jobs, they're adapting. You got someone who sits behind the desk 15 hours a day then goes home and watches TV. All they do is they stare a screen, so what happens to him? They get all these different you know your pelvis is tipped forward, you have tight hip flexors, you don't have mobility in the thoracic spine. Oh you're myopic. You lost your ability to see things far away.

Well it's like that myopathy is an adaptation. All you do is stare at something two feet away the whole day, like thank god your nervous system is not diverting resources to doing something that you haven't asked it to do. And pretty much our only goal evolutionarily is to stay alive so we can spread our genes and now you can go on Tinder, another screen and you could procreate that way. So you don't need to do anything to be an adaptive human being in our society.

That's the problem is that like we get so patterned into doing certain things but then when we have to break those patterns to do things that typically we don't demand of ourselves, then we have to compensate because we can't achieve if you want to call like authentic movement. We're not in the right position to do certain things neurologically, we don't know how to access certain motor patterns so we have to compensate being kind of like stuck in the motor pattern that you have adapted to to achieve certain things.

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To kind of go back to your first question, all I do as a PT is I just try to increase movement variability to make people more adaptable. I can change position of joints by trying to access the nervous system which is where breathing is a big thing. If I have to use a manual therapy technique, I'll do that. Ideally I want the person to be able to achieve those change themselves because I don't want you to be dependent on me, I want you to be able to recognize things and fix yourself.

And so it's just about restoring variability to the system. Without over simplifying, that's really all I do. It's nothing more, nothing less.

Robb:

Have you read the book by Matt Ridley, the Rational Optimist?

Doug: I have not. But it sounds cool. Tell me about it.

Robb: It's a super cool book. And he kind of econ-history kind of conglomeration and he makes this argument that the future will be better, markets and stuff tend to free us and liberate us. But he makes this interesting point that part of what has made us as successful as we are is specialization.

And you know I don't think anybody can really argue with that. But it's interesting to me that it seems to be happening on parallel tracks. The specialization is freeing on the one hand because you can have someone like me who's found a very specific niche and I'm able to make a living doing this stuff. But then the demands of that specialization, you know I'd have to figure out how not to ruin my low back by sitting and writing all the time, by sitting on airplanes in a totally kyphotic position which shortens hip flexors.

And for the quality of life I want, I need to constantly undo what the specialization is imposing on me. We had a guy who was a glass blower for 25, 30 years. So basically with glass blowing, you're leaning forward, you're in a kyphotic position. You got to reasonably heavy metal pole with a big chunk of flaming glass on the end of it. And you spin that stuff around and manipulate it and make stuff out of it. So you're in a really kyphotic internally rotated shoulder position.

And then what this guy did for recreation was ride a bicycle for hundreds of miles. And he could not squat to a 20-inch box without falling over and like overhead was basically his finger tips even with his eyebrows. And so over the course of a couple of years just getting this guy to hang from a bar and foam roll and put some half pound plate in his hands while he was lying on a foam roller and stuff like that.

The guy actually gained like an inch and a half almost two inches back on his height at the age of 65. And was much more mobile and happy and felt good. But this guy had found a really specific niche, glass blowing that he just crushed at it. He made a really good living, internationally renowned for this stuff. But it really took at a toll on his body. You wouldn't even think about glass blower being something like major league baseball pitcher type status. But it completely transformed his body.

So which is interesting this trade off of finding specialization and being able to make a good living doing that and carving out your niche. But then there's this flipside to it that there's probably some sort of encroachment into what would be optimize living beyond your specialized way of making a living.

Doug:

No, totally. I mean there's no free rides when it comes to adaptation in Biology. Pretty much like my cognitive development was shaped by 80's movies. I remember there was a scene in Karate Kid 3 like the Cobra Kai guy. Like Daniel saw 2359 and is being trained by this Cobra Kai guy who's manipulating him the whole time so that the Cobra Kai person that he's training can steal his title like the All-Valley Karate Championship.

And so when finally this devious, conniving Cobra Kai instructor reveals to Daniel that he wants him to train or to fight in the tournament, Daniel is like but I thought your lessons were free, he's like no, nothing's for free. It's the same thing in Biology. For you to be a good baseball pitcher or good at blowing glass or a good cyclist, you've asked your body to spend a lot of time in these positions and you're exerting yourself, you're breathing hard whatever it is. You're under stress.

I mean if you're throwing a baseball in front of 50,000 people and then there's millions of people on TV and you're in the world series it's like all your body knows is how to minimize threat and adapt to stress and everything comes at a cost.

So the ideal thing from a health perspective is to do a little bit of everything. But our society or modern society is not necessarily conducive to that. So we can just try to manage these stuff by introducing variability. And it's not, specialization is not bad. It's just like don't let yourself specialize so much that you lose the ability to do other things.

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It can cost deleterious effects in your health and that's the balance that we struggle with because we do a lot of amazing things if we were truly like doing what we are designed evolutionarily to do. It wouldn't be – smart phones and all those communication technology like. It's made our lives a lot easier, it's reduced the need for us to have this variability. In a lot of ways it's just a trade off. Like you said, everything is a trade off.

Robb: Doug, this is maybe an answerable question but for the average, you know someone like me, I'm 43, I'm trying to be reasonably competitive in like Brazilian jiu jitsu, what's a good general protocol as far as striking a balance between aerobic capacity kind of a movement palette that you're going through, how would you put something together for someone like me that sits a lot, sits a decent amount at the desk although I've been breaking that up and I'll set my timer for 25 minutes, will stand 25 minutes.

I've got a kneeling work station, a sitting work station, a standing work station. And so I try to rotate through that stuff. I do some mobility in between. How would you undo some of the evils of the repetitious stuff I'm doing and then also just generally what do you feel is a good prescription for that generalist kind of approach.

I know CrossFit is kind of build itself as such and I think with some tweaking it can be a pretty good modality towards that end but the prominence of the sport of fitness side of this has kind of pushed it from what I feel was this minimum intervention, maximum output kind of thing. It's kind of flipped it around. But how would you tackle stuff like that?

Doug: Yeah. That's a really good question and you know conceptually, something like CrossFit would be great. CrossFit like anything else has so much variation between the people implementing it. I mean CrossFit like some of the PT forms like gets a bad rep because of course there's how many thousands or millions of people doing CrossFit. I'm sure you can find one video on the internet of somebody doing CrossFit and doing something that is dangerous or is outrageous and offending.

But you can see the same thing about any kind of commercial model. And because CrossFit's been successful, people tend to want to bring down successful people so it's like oh you know, let's bash on CrossFit. What CrossFit is trying to achieve is sort of this broad spectrum of fitness, introducing people to varying movements, varying energy system work, paying attention to what they eat.

There are a lot of people who exercising and working out for the first time in their lives because of the sense of camaraderie that CrossFit and similar type of programs bring. Like you said, it's different when you're

talking about competing in a CrossFit games because that's elite athletics, it's a whole different thing. And that's where you have to be so adapted to do certain things.

I wouldn't be surprised if most of the people who were training for that at this point like some kind of like orthopedic complaints because I mean to train at that kind of volume and intensity all the time which is what you need to be competitive like something is probably going to break down.

You ask the question I'm sure you're doing a lot of the right things as far as trying to combat certain lifestyle things. I would try to find, it's really goal specific. Everyone's got different issues or patterns that they need to sort of re-groove. So, if you can identify the things that you have trouble with like you can't achieve depth in a squat.

Well first you have to address okay every joint has a proximal and a distal component. So in orthopedic especially they always focus on the distal component. Let's do a joint mobilization, let's move that limb around. But at that proximal component so in the case of the hip, the pelvis, is not in a good position, then the extremity is going to have to compensate to achieve certain kinds of motions.

So the first thing you would want to do is okay kind of fix the center, fix the rib cage, fix your shoulder blades, your pelvis and then you can do certain kinds of activities if you want to call them mobility drills whatever. Find the ones that work for you where you feel like you get the change you're looking for and just every so often throughout the day, get out of your chair and try to do it just to kind of keep yourself in a better position so that you can't get around sitting in a modern world.

And sitting you know is a bit of like of scare tactics like you got to sit a certain way and do this and do that. Sitting all day is like polishing a turd. There's no great way to do it. And like anything else it comes down to variability. So people have been told like kids in school specially this kills me like don't fidget in your seat.

Fidgeting is exactly what you should be doing if you're sitting all day because distributing the stress to different parts of your body continually so you're not just like sitting in one, imagine if like I told you you've got to

sit for eight hours and you can't move. Like after a while a certain part of your butt would hurt, you'd fidget...

Robb: Yeah, they think they call that bedsores, yeah.

Doug: Yeah, it's like no shit, so variability is the key like if you have to sit, get up whenever you can, fidget, don't try to stand in one position for too long, there is this perception that, you know, we have to like sit up straight like actively extend our spines to do what's called good sitting.

And the problem is like you know, you look at what makes human beings unique it's our kind of like upright gait and so we have to counter gravity in different ways than other mammals. We're continually fighting gravity, we need extension to make us upright human being, but sometimes you know, specially with like stress and stuff like that, you know if you're walking down the street in a bad neighborhood in the middle of the night and somebody snuck up behind you and stuck a gun to you back, you would take a breath of air and hold your breath and arch your back.

Like extension, we need it because it's adaptive and you need it to perform you know, athletics at a high level need it to just stand upright and be a human being, but if that extension goes awry, then you know, it can perpetuate this chronic stress thing and different sort of motor behaviors that a lot of times I have to break when I see people in my clinic.

So if you're like one of the super type A people, you're like I'm going to sit in a perfect posture all day and all you do is just lock your spine into extension, like that creates its own sort of problems and most people like in my experience do not need more extension like even the kyphotic person, like they're flexed and they look like their shoulders are rounded and stuff like that.

But a lot of times like the ribcage is still very prominent, it's rotated upward on the front side so they have these big rib flares and they have to use kind of accessory muscles of respiration to help them meet the demands of whatever it is they're trying to do.

So they'll use their pecs and their neck and their lats and all these things that can kind of help create this pressure exchange in the thoracic cavity but at the same time it's like it actually drives extension further even

though they don't look extended, so that's kind of a complicated answer like practically it's not a lot you can do with what I just said except for just vary your position and then at the end of the day like good training is good train.

Like I know that you and a lot of our listeners are pretty educated about this stuff. It's like just do what you're doing and recognize that like some of the things that you do like your job might have, you know an orthopedic or a neurological cause, and any opportunity you get just try to move around and change positions and that's really all that you can do. Because like I said we're polishing our turn so it's pretty hard you know.

Robb: Absolutely. And even folks who have a very mobile job like guys in the military that are humping a rock for you know multiple kilometers day in day out, you see this you know tight hip flexor, tight hamstring pathology that tightens the hips and then the L4-L5 disc start you know getting ground on like a mortar and pestle and you know that demand of their job isn't just going to magically go away but you have to figure out some way to try to undo the evil of the job that they're doing. And so that's a great answer, that's a fantastic answer.

Doug: Yeah. And you know like with the military like I know you had some physicians on talking about sleep and it's like you can't tell special ops guys like okay, you have to work during the day to lower your cortisol because that gives away our whole tactical advantage.

So you have to manage a lot of these realities specially when it comes to like the tactical stuff, I'm glad you brought that up. Because there is this perception that like, that I was talking to a colleague about this on social media, if you carry a gun that somehow that makes you like different. You have different needs.

At the end of the day like your physiology doesn't change, adaptation doesn't change. So it's like we'll have these commercial programs are very popular with the military because it creates like oh like our training is like so chaotic and there's no structure to it, just like your job, and it's like you know combat is chaotic so we have to like train you to do all these different things at once and it's like yeah, I mean to be, to do some

of the things you have to do in the military you have to be well rounded physiologically.

But from a training standpoint like if you're trying to develop motor abilities or qualities, you have to do specialized blocks otherwise the nervous system is like you're trying to ask me to do all these things at once, how can I adapt? So you can still structure a program to be well rounded but if you're being well rounded everyday of the week and you're kind of like operating in this middle zone where it's like you're never working at like a high enough intensity to get stronger.

You're never working at a low enough intensity to recover and elicit certain cardiac adaptations that are favorable, and you're in the middle all the time it's like you're just kind of like this jack of all trades master of none, which ultimately what we need to be but if you structure the training the right way you can elicit more favorable adaptations in a kind of more progressive way.

So like this tactical fitness programs it's like every sport has tactics you know carrying a gun does not mean that your tactics are more important than somebody else's.

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And the whole chaotic thing, it's like military guys, special operatives guys just like everybody else, they're not all the same. And even within the military and the special operations community, if you're training a reconnaissance team let's say that I still walk 20 miles to a hike site with a lot of equipment, you're going to train differently than a direct action team that lands on a helicopter on a building fast ropes and, kicks down some doors and is having beers 10 minutes later back at wherever they're staying.

So it's different and these commercial models that are like preach this chaos appeal to people. And a lot of times people in the military have this thing where it's like if you're not one of us, then you know you don't really know what we do. But a good coach who understands physiology and adaptation can train anybody. You don't need to be one of us.

And that's where I think the military can kind of go wrong with a lot of their personal preparation because it's like you know, like a lot of people

have read or seen Lone Survivor, like there's nothing you can do to train for when you get ambushed you're the only guy left alive, you're rolling down a mountain breaking your back, you're escaping and evading for two days, like no training program can prepare you for that. That's just like you had the will to survive and you overcame it.

But if you think that like tactical athlete or whatever program of the day is like is going to prepare you for that like it's not you know. Just good training is good training.

Robb: Right. And correct me if I'm wrong, but it seemed like part of what you were suggesting there is some planned blocked periodization to try to do some of these performance parameters like maybe a mobility block a little more emphasized while maintaining strength and cardiac output. Then maybe pushing cardiovascular adaptations you know for blocking and also clearly looking at the needs of the individual like within a team of guys you'll have some people that come in with a power athletics background, some people with an endurance background.

And so even the individual needs are going to be quite different across a given team even though theoretically their jobs are very similar and they've been selected you know gone through a selection process that's supposed to create a certain uniformity.

Robb: Yeah. And like perfect example like you've had Joel Jamieson on your podcast like Joel trains MMA guys who they need to you know be good in a lot of different qualities and have a lot of different adaptations to be good at their sport, but he does it in such a way that it's structured where he's not training every quality at once.

And the art of it is okay, how can I develop, if you're trying to develop a particular quality, your other qualities are going to diminish to some degree so the art of it is alright how can I develop this quality that I'm striving to improve without my other adaptations that I achieved in previous blocks totally diminishing.

So it's like what's an acceptable amount of loss of those qualities, is it like 10%, 20%, like I don't really know, but it's like you have to prioritize, maybe devote like, you know 50% or more of your trainings the quality you're trying to achieve or develop and the rest of the qualities you're trying to maintain.

The ones you're trying to maintain like you're certainly not going to improve those qualities and they might diminish a little bit but a little bit of residual loss in those qualities is not that big a deal if you're trying to develop the overall system, and that's just you know, like I said it comes down to just coaches who know understand that adaptation process and in the military it's really no different.

So that's why like a lot of these programs, it's like, they're not certainly better than any other kind of model because at the end of the day you try to adapt to stress and be a resilient human being and military sometimes necessitates that more than other professions but physiology is physiology.

Robb: Right. I like it. I like it. Doug, let's circle back again and talk some more about the posture restoration instituting diaphragmatic breathing. I know that this is kind of a hot topic right now. I actually got exposed to I think the early iterations of this story back in the late 80s or early 90s. I'm blanking on some of the books that were out at the time but talk folks through that, like looking at diaphragmatic breathing and just the diaphragm in general as kind of the anchor point for postural issues like ranging like you said from you know pelvic rotation to shoulder impingement.

I don't think that – that's not the first thing that leaps out of folks when they're thinking oh I might have this issue or been to a PT, you know they're doing standard Theraband type stuff on, internal external rotation stuff of the shoulder but they're not looking at like the flared ribs, changes in breathing patterns that might be contributing to that.

Doug: Okay, so this is a loaded question. I'll try to do as good a job as I can just because there's so much information out there and a lot of this is not the best information. So first of all like kind of functional training, diaphragmatic breathing is, it's a redundant term.

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If we're going to be picky about our nomenclature, I mean if I severed somebody's phrenic nerves and like you know cut off the innervation to the diaphragm, you'd be on a ventilator, you'd be dead. So like at any given moment like we're all diaphragmatically breathing or if it wasn't that severe injury you'd be on a pulmonary equivalent of the pacemaker.

You would need some kind of external device to innervate your diaphragm for you to breathe. So we're always diaphragmatically breathing. It's kind of redundant term.

So what are we really asking, or what are we really trying to achieve with what is commonly termed diaphragmatic breathing. The diaphragm is really, the way, the postural restoration teaches it, it's the key muscle to maximizing movement variability and accessing the autonomic nervous systems.

So a lot of like the different patterns that you see that might be correlated with pain, we can never prove that anything causes pain, but everything is kind of correlational or even patterns that might prevent somebody from achieving a certain position in a movement, or even patterns that people stressed out and you know, they jack up their adrenal glands that will produce too much cortisol whatever, they're all autonomically driven.

I mean the brain controls everything, your joints don't put themselves in a position, your muscles do which is controlled by the brain. So I'm first going to talk about what diaphragmatic breathing is not because you'll see this a lot of times like advertises is what it is on some of the blogs. You don't go on a blog and it's like diaphragmatic breathing is the heat.

Like if you do this diaphragmatic breathing the thing I'm going to show you, you're going to add like 200 pounds to your squat like right away and it's like at some guy just like laying on his back and is being told like I only want the air to go into your belly and nothing else, and kind of like that's not really what we're going after, because you hear that a lot like just breathe with your belly.

When you breathe with your belly, you're not accessing the entire lung field. When you take a breath of air, you want a 360 degrees circumferential expansion in your entire lung, upper lobes, lower lobes, even in the back I mean, a good breath of air you should see the person's back move.

So when you hear things like the chest should move when you breathe, that's kind of half true. You don't want the chest moving up when somebody breathes like as in being pulled up towards your face too much because if you're using accessory muscles of breathing to a pathological

degree like somebody would say emphysema, like their diaphragm has lost all of its leverage, its respiratory muscle, should they need to use their necks, just crank up on their upper ribs and get air in somehow.

Yeah, that's not what you want but I mean when I see somebody laying on their back, their stomach and their chest kind of expanding together and getting good apical fill like in their chest rises outward not upward, that's money, then I know that person is positionally doing a lot of things to help him or herself.

So that's what we want with "good diaphragmatic breathing." And then we also, we can't talk about diaphragmatic breathing without talking about the body's inherent asymmetries. And this is kind of like the key tenant in PRI and this is from the Mayo, like I didn't make this up. So they see the human body is balanced through the integration of system and balances.

So basically we're asymmetrically asymmetrical and all those asymmetries create this balanced organism. So you know, look at the human being you think we're symmetrical, we have two arms, two legs, two eyes, but if you cut it in half internally we're not symmetrical. So we have different organs on different sides of the body. Our diaphragm, even though it's muscle, the right and left diaphragm are not the same.

The right diaphragm is thicker, it's got broader insertion site than the left diaphragm. And the right diaphragm also has liver underneath it that helps to give it leverage as a respiratory muscle and helps keep it what's called domed around it. So when you take a breath of air in, your diaphragm kind of flattens out and loses its dome to create a vacuum in the lungs so that air can go from the higher pressure outside to lower pressure inside your lungs.

And so that asymmetry is important because if you've got that liver underneath your right diaphragm, that diaphragm on the right side has more, a better mechanical advantage as a respiratory muscle and this has consequences. More importantly when we talk about asymmetry our nervous system is not symmetrical, our brains. So our right and left hemispheres in our brains even though they work together, they specialize in different things.

The relevant one as far as PRI go talking is the left hemisphere of the brain has a more dominant role in motor control than the right and the left side of the brain controls the right side of our body. So for all these reasons, these asymmetrical reasons, we are what's called right lateralized. That's nothing to do with being right handed or left handed, what will favor our right side because neurologically evolution kind of gave us a leg to stand on.

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Like asymmetry is not a bad thing. Every time you take a step, you're asymmetrical. And if you were symmetrical you wouldn't be able to move. So our sort of evolutionary leg to stand on is our right side because that's how we're wired neurologically and anatomically. And being right lateralized is not a bad thing per se, because you're going to stand on your right leg and do certain things.

But if you're so right lateralized neurologically that you kind of can't switch sides and alternate without compensation, so in other words you're kind of like still even if you're going left you're still kind of exhibiting this right dominant pattern, it's hard for you to go to the other side without compensating. And that's where some of these issues that you know whether it's orthopedic stuff, even some of the autonomic issues or stress related issues, your body is always going to go to the place that's least threatening.

And because in some ways it's easier for us to breathe on our right side because it maximizes that leverage of the right diaphragm, under stress we always default to that, after a while we only have one strategy to adapt to stress and that's just to further right lateralized.

So in this right lateralized pattern you can't talk about the nervous system without talking about biomechanics. It's the same thing as much as people try to differentiate. When you were right lateralized, your left pelvis, left side of your pelvis is relatively more anteriorly rotated than your right to get your center of gravity over to the right.

If my pelvis is right oriented to support right stance with this right lateralization, my thoracic spine kind of has to compensate by rotating to the left so I could look straight ahead and be a human being and deal with the world. So even, and I'm not making this up.

I mean I can put links on the blog afterwards, there's research to support that even in "normal people" like normal people have this right thoracic spinal curve, normal people have this left thoracic rotation, and a lot of this comes from the scoliosis literature where you know, if you have a certain degree of curve a medical practitioner will say okay you have scoliosis and it warrants some kind of medical intervention.

But because of how we're wired neurologically scoliosis is really continuum and we're all inherently scoliotic to some degree, it's just not pathological or does it warrant any medical intervention, but we all have these curves. And when we step on the right side, we want the spine to orient to the right and curve to the right a little bit. We also want to be able to curve to the left a little bit when we step on our left leg. There's no such thing as in a perfectly straight spine. Any given moment your spine is always moving and doing something.

So even something like scoliosis which is usually an orthopedic problem like what do we do for it we brace people. And if it gets really bad we put a rod in their spine to straighten it out and at a certain stage that's necessary. There's no arguing that because you want to stop the progression of the curve but what drove that spine to contort itself into such a way that that curve developed, and that's autonomically driven and who knows what it is, it's how somebody adapts to stress whatever.

But so, going back to this asymmetrical pattern in this right lateralized pattern with the thoracic spine rotated to the left, pelvis oriented to the right, biomechanically speaking for me to rotate my thoracic spine to the left, my ribs on my left side have to externally rotate.

So just by virtue of the position of my ribcage, my left ribs in that pattern are going to be in a state of inhalation because external rotation of the ribs and back extension is inhalation and the right side is in more of a state of exhalation where the ribs are down. You don't see those rib flares on the front on the right side as much as the left side.

And the evolution of this pattern could be okay, let's say you know this pattern alone is insufficient to adapt to stress. Whatever stressors this person is putting on his or her body, well then that person to get air in might need to extend even more extend to the right side which before in

that pattern the right ribs were down, now with more extension to reduce stress or adapt to stress so now we're bilaterally extended.

We look more symmetrical but then you know you see these people with these bilateral rib flares, they're really extended on both sides, the more extended you were like that then you lose all this mobility and movement through your trunk and if you don't have that movement in your trunk then your scapular position, your pelvic position gets altered and now your joints have to do weird things or compensate in such a way to gain motion because if you're not getting motion authentically with your joints in a good position, specially your shoulders and your hips which are ball and socket joints.

If you don't have you know, good socket orientation or position, then the balls in this case like the extremities have to do. Different things probably suboptimal things if you want to go that far to gain motion and so what the breathing does is, by breathing in positions or trying to create patterns that the person has difficult time achieving, if we can breathe in these patterns and fill different chambers of the body or different cavities of the body with air that are normally used to getting air because of these patterns that we default to under stress.

Getting air in these chambers and breathing in these novel positions, breathing is kind of like the trigger to the nervous system like okay, it's safe for me to go to this position because if you feel like you can't breathe in a position like you see people doing planks and they're like holding their breath hyperventilating, like all you're doing is this jacking up your sympathetic nervous system which that might be the goal of the exercise.

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But if your goal is "like corrective" and I hate using like corrective because there's deviations from normal and no one is completely normal, I get that, like that's a minutia, but what we're striving for is variability, and the breathing is the key to variability because if we can get in these novel positions, then it signals to our nervous system that it's safe for us to vary our movements and then sometimes you know, just by getting people in these positions and breathing you'll see huge gains in mobility because now the body isn't under threat.

These proximal segments of the joints are in better positions, so as the biomechanical explanation for it, but it's really driven by the nervous system and like I said breathing is the most sort of potent way that we have to influence the autonomic or automatic nervous system which is normally not volitional so that's where breathing is huge.

And you know with the asymmetry thing like to optimize diaphragmatic breathing because that's the answer you want, you can't do that as the diaphragm itself is really it slants the ribcage position. So like when the people have these big left rib flares, that just flattens out the left diaphragm even more which is already anatomically flat because of the asymmetry.

So the flatter that is that diaphragm will not work well as a respiratory muscle, it will work better as a postural muscle because you've given it leverage, you've extended the spine, so muscle work you know, better or have different mechanical advantages depending on the position that they're in.

So for example if you can do something where you active your left hamstring, reach with your left arm to kind of like feel your left abdominals, like your internal obliques, transverse abdominus, that kind of thing, and then breathe, by getting that ribcage down on the left side that automatically puts the diaphragm in a better position. That left diaphragm which normally has a harder time as a respiratory muscle, now that left diaphragm as a respiratory muscle and once that kind of boots up that's just as very potent neurological signal, it changes a lot of things.

So, if you want to call, PRI uses a phrase called neutrality and neutrality is really just you know, you could think of it as balance or a normal alignment, that's not really what it is. Neutrality is a transitional state. So if like you're changing gears in a car, you got to go through a neutral first. No one's sane to be neutral or symmetrical all the time and not move.

You want your joints to be able to move at all directions. But at least if your joints can achieve this neutral position or this sort of "normal orientation at the sockets in these ball and socket joints" then it's much easier to evaluate a joint. Because I don't know if the joint problem that

you're complaining about is driven by the position or because you legitimately have pathology in the joint.

So like when it comes to stretching like, I don't want to stretch anybody until I get them in this neutral position. Because like you see a lot of things on the internet like oh you got to get shoulder internal rotation. And people are like sleeper stretching and cranking on your shoulder. But most people when you test internal rotation of their shoulder, the deficiency is because of what's called a hard end feel.

So it's like bone on bone. The scapula is rotated forward so when you go to rotate humerus, internal rotation, you get a bony block, you could even call it an impingement. Now I don't use that language with a patient because then it's like oh what do you mean like a block on my shoulder is jamming, like you have to kind of phrase it in such a way that it's not threatening.

It is a biomechanical issue but you know it changes quickly with the right sensory input which in PRIs cases generally through an exercise that incorporates breathing. So once I can get that scapula in a good position with the breathing, shoulder internal rotation usually takes care of itself.

Now if it's still limited and the end feel goes from hard to soft where now I feel like it's a muscle or a joint capsule thing that's preventing the shoulder from rotating, now I can stretch it but at least I'm stretching it now and I'm actually stretching where I intend to stretch, which is the posterior rotator cuff or the posterior capsule of the shoulder, and I'm not just creating more pathology by jamming the humerus into the scapula with a hard end feel because if you "stretch at a position," you can create pathology.

So that's why this positional thing is so important and the quickest way to achieve position that I know of, I mean there could be something else, is through this diaphragmatic breathing if you want to call that. So it's kind of a long-winded answer but I hope I answered the question.

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Robb: Oh, amazingly well, amazingly well. Really fascinating stuff and it makes me want to go back through and do some updating on my anatomy and physiology because it's been a long, long time since I've been thinking

about flared ribs and internal and external rotation of my thoracic spine. So that was a fantastic explanation. Doug, where can people track you down on the interwebs?

Doug:

So I'm on Twitter, my Twitter handle is @greenfeetPT? I think there's going to be a link on your blog for that. And then I work at a gym called Peak Performance in New York City. And Peak Performance is great because you know, I get to work with strength coach and nutritionist who kind of share this like integrated mile of performance.

So, we're trying to at some point come up with a curriculum where we can kind of integrate like PT with strength and conditioning and nutrition. And so that's something to look out for in the future. And then as far as the postural restoration stuff goes, there should be a link to the postural restoration website on your page. And they offer courses that kind of goes over all this methodology.

It's really, I mean, it's overwhelming you know like after the first one or two courses I took I was like this seems really cool I don't know how to apply it. It's worth the investment in learning it because it really is like, it does integrate all these different things but it also challenges a lot of the paradigms that we've kind of hold sacred.

But if anybody's interested in those courses they offer, they offer them very frequently. I mean they're going on once a weekends somewhere in the country so that's they find out about PRI and then anything else my email, I can give you link to my email if anybody has any questions I'm happy to answer. But other than that, yeah those are the big things.

Robb:

Awesome. Well Doug it was fantastic having you on the show. Let's I'm sure folks are going to have a lot of questions, let's maybe circle back in four to six months and get you back on the show and maybe take some questions at that time and get a little inter-activity going on.

Doug:

Yeah, that would be great. I appreciate the opportunity.

Robb:

Well Doug, thank you for coming on the show. Thank you sincerely for your service to our country. I really appreciate everything that you've done in both the Physical Therapy realm and also being at PJ, that's awesome stuff. And it's really been a treat having you on the show today.

Doug: Alright yeah, thank you so much, it was fun.

Robb: Awesome Doug, take care we'll talk to you soon.

Doug: Alright, take care.

Robb: Okay, bye.

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