

Steph G: Welcome to Harder to Kill Radio, a top rated health and fitness podcast. It's Steph Gaudreau, your host. This show is all about finding out what it takes to build unbreakable humans and passing that knowledge onto you so you can unleash your inner bad ass and change the world. We have another amazing guest on the show this week so let's do this.

What's going on? Thanks so much for tuning in to the show this week. I'm really pleased to have a woman on the show after my own heart. Her name is Dr. Stacy Sims. She's an exercise physiologist and nutrition scientist who has a very interesting field of specific study so something that applies to, well, about half of the population. I really am excited for this show. There is so much good stuff that we're getting into and as always, you can get links to stuff that we talk about in this episode at stupideasypaleo.com. As always, please take a second and hit the subscribe button on iTunes. That way, whenever there's a new show that comes out every single week, it will automatically get sent to your device and it has a great side effect of helping the show get discovered by people who would normally never find the show. All right, let's jump into this one.

Thank you so much for joining me on this episode of Harder to Kill Radio where we're talking all about building unbreakable humans through fitness, nutrition and mindset and I am super stoked like, God, I'm a little bit fan girling right now, to talk with a very, very amazing woman who is doing not only some really super nerdy awesome research, but has written a book that I just got my hands on a couple weeks ago and I was like, I wish I had this book when I was racing bikes like 10 years ago. It would have super helped me out, but nevertheless, there's no time like the present so welcome to Harder to Kill Radio, Dr. Stacy Sims.

Stacy S: Hey, thanks for having me.

Steph G: Yeah, I'm super excited. I want to give a little bit of backstory about how I came to find out about you because I think it will enlighten the conversation a little bit, but recently on my Instagram, I posted something about strength training because that's kind of what I do now. Strength training and the fact that as women, our menstrual cycles can be strength training and feel different, depending on what point of the cycle we're at. I've talked a little bit about periods and menstrual cycle and stuff before, but it never ceases to amaze me. I had so many women who were mind blown like, "What? I didn't know any of this.", and so a lot of the, some of the readers, some of the folks in my Instagram were like, "You have to read this book, ROAR by Dr. Stacy Sims.

That's how I first heard about your book and you and then proceeded to get the book and then I guess before we started recording, tear through in a couple days so I'm really super pumped about just, I just want to pick your brain about so many things, but you have done an amazing job. I just want to give some kudos for sort of creating this bible. I'm holding it right now, this like bible about if you're a woman who exercises, trains for performance and just wants to be sort of overall healthy as well. There's definitely a section about that. There are some differences that we need to know about in our physiology so yeah. You wrote this

book, ROAR: How to Match Your Food and Fitness to Your Female Physiology for Optimum Performance, Great Health, and a Strong, Lean Body for Life. You could ask my husband, as I was reading this at different times of the day, I would just sort of go like, "Yes. Finally, like someone's saying this stuff.", and so for me, it's sort of great validation, but I really would love to know. Gosh, there's so many questions.

I'm trying to organize this in my head. I'd love to know if you can give us your main reason for writing this book to start out. Let's start with that.

Stacy S: Frustration.

Steph G: Let's start with that.

Stacy S: Frustration, really, no. Gosh, so I've been in athletics, running and ballet and iron man and bike racing and all that stuff since I was 13. Going through it all, always having questions. I was that little kid who's asking why, why, why, why, why. Then when I got into university and people were telling me things to do and it didn't make sense to me and so I really started digging in and asking these questions and no one had the answers. They'd all be like, "Oh, just do this." I'm like, "But this is based on dudes. It's not, like we're different." Everyone would not want to talk about the period or you know. I was on the crew team and all the women would talk about, "Oh, yeah. Well, my period's going to start, but none of the male coaches want to know about it." I'm like, "Why? Why? Like why is it so taboo?" It kind of drove my research and then as I started getting into it and talking to people and realizing that it does make a big difference.

That the days before we have a period, yeah, everyone feels like crap, but why? Why is that? Why do we talk about it? Then if you're raising or something and you're like, "Oh, my period's going to start. I'm going to have a really bad race days." It's like, "What? It shouldn't be like that.", and then you start reading about the female athlete and everyone's talking about all the pathophys aspects, "Oh, you're going to get osteoporosis if you don't have your period and you're going to become anemic." I was like, there's got to be better things than this so as I started digging and applying and applying to myself and my teammates and seeing a difference, then people started catching on.

Then Selene Yeager who's my co-author on that, she actually participated in a women's camp that I did and she's like, "You know what, all of the stuff you're saying that women are not small men, we need to put it in a book." I was like, "Oh, okay. If you think so." She pitched it and then it became ROAR, and so it's like everything I've been saying for the past 20 years is finally been put in a book. I'm kind of psyched about it and the fact that now it's opening up the conversation. In the past year and a half or two, that a lot of people in the media are going, "Whoa, this is like, this is novel." I was like, "But it's not really." It's just now people are talking about it. If it makes a difference and it makes people to finally able to talk about it and talk with their teammates and finally go, "A ha. It isn't my head. It's actually my physiology." It gives women that extra edge and what to expect to.

When I was pregnant, I didn't know what to expect. I didn't know what I was allowed to do so digging in and finding at the research that the more exercise that you do, the better the placenta is because the placenta and the uterus are organs, and the more that they have hypoxia, the more blood flow ends up going there because they get more capillarization, but no one tells you this stuff so it's like, "Well, you know I'm not a dude and my daughter's not a dude and my friends aren't all dudes." We got to look at it, yeah.

Steph G: It's interesting to me because, first of all, I know of Selene Yeager from the mountain biking world and so when I saw she's the co-author, I was like, "I know that name." It's interesting to me how there is this obvious, "Well, of course you're not dudes.", but then, the tagline of your whole book is women are not small men and it seems like there's been such, and your research as a physiologist and all the stuff you do in academia and your collective body of research and knowledge that you have. It's interesting to me how, we're like, "Yeah, of course, women aren't dudes.", but when you look at a lot of the research that's being done because we have a lot of people who are very data driven especially in sports like endurance sports right, specially ultra endurance level races even the crossfit world now. I mean you've got a lot of data driven people.

Yeah, we look at things like intermittent fasting and this and that and all these biohacking things. A lot of them I think are sort of drawn from research, but when you look at who the research is done on.

Stacy S: All dudes.

Steph G: It's all guys so what.

Stacy S: Yeah, I know.

Steph G: What was some of your experience? What were some of the things that you ran up against when you were looking for stuff that was out there, that was research that haven't been done. What are some of the rational that you've heard about why research isn't done on women particularly we're in a reproductive age?

Stacy S: I've heard so many different things. The biggest generalization is, "Oh, well, the differences are so small that you can just generalize from men and then the other is. Well, women serve as their own control so it doesn't really matter, they can be included, but we'll just combine their results with dudes because the differences are small. Women serve as their own control so if there is a difference, it doesn't really matter." Then other ones I've heard is, "Oh, it takes too long." I just had this argument with my Ph.D., well, I shouldn't say argument. I just had a very long, month long discussion with my Ph.D. student because he was trying to say that he wanted to do all the testing on women on the pill so he can control further cycle and I was like, "But you're not testing the women, you're testing the pill that she's on.", because when we take oral contraceptive pill then you're suppressing her own natural cycle, her own natural hormones, which have such a systemic effect that you're not actually testing the woman.

He's like, "But.", and I was like, "What are you trying to do? You're trying to make it easy and you're trying to say, I'm including women, but you're not.", and so the big argument is, "Oh, women are too difficult because they're biphasic with the menstrual cycle and it's too hard and if you miss this phase, then you have another months to wait and we don't have that time." I'm like, "Well, yeah you do. If you want to do the research well and you want to have really good outcomes, then you make the time." Like in the medical community, they make the time. Clinical trials are super long and it's just an excuse, many in a time crunch. When people like it is not just guys who do it either. Women who are involved in research who don't really click on to the fact that they should be included in the menstrual cycle, then they don't see that either.

They are just so ingrained in testing guys because guys for the most part are like, "Yeah, I'll do a muscle biopsy. Yeah, I'll do intermittent fasting. I'll put my body through the ringer.", and women are a little bit more hesitant so they're like, "Data subjects, let's get them in. Let's get them in because I want to get them in, do the testing, publish, get on to the next study. Get the men, get the data, publish, get on to the next study.", but it's not really answering the question.

Steph G: I love that you held them to task on that. I mean it's so true. It's like, well, we've got to sort of dig into this stuff and so I'm curious, if you can give us a quick primer on, like you said, the biphasic nature of the menstrual cycle. I just want to add a little sort of PS to anyone listening. If you're a guy, this is good stuff to know because I'm a coach at the weightlifting gym, one of the weightlifting gyms here in San Diego, and I was having this discussion with one of our male athletes. He was just like, "I had no idea."

I think not only is it important for guys to listen to this, but if you are a man who's a trainer, a coach, your program for female athletes, you're just trying to understand your spouse or significant other better, I think this is a really important conversation for everybody to listen to so if you are a guy and you're like, "Oh, no, they're going to talk about periods and menstruation and bleeding and hormones.", and like, "This isn't my jam." This is everybody's jam.

Stacy S: It should be.

Steph G: Yeah.

Stacy S: Yeah, it should be, yeah. It's like, yeah, I do a seminar or even, I was teaching class yesterday and I make everyone say, "Women have periods and it's okay.", and men's faces are red and there's laughter. I'm like if you cannot talk about this in a forum like this, it's small and you can't even say the words without looking at someone that women have periods, how are you going to do your female athlete justice, because women have periods. Yeah, it is something that people need to talk about and understand. The primary thing is with the biphasic responses, when a woman starts bleeding, the first day bleeding, people don't want to talk about it, but women really have a fantastic boost in performance because all of a sudden, estrogen, progesterone have dropped off and that's what causes bleeding. Women feel fantastic and have PRs either the day before, the day of or

the day after they start bleeding. It depends on how long it takes for the hormones to come down.

Then the two weeks like the first day and then up to about day 12 with ovulation, this is when hormones are really low and we're "More like men.", where we can access carbohydrate really well. We sleep well. We have decreased fatigue sensation. We can hit intensities. There's so many different aspects that make us more like men in that timeframe because estrogen and progesterone are really low, but at ovulation with the surge of estrogen and then you go into what we call the luteal phase and with estrogen and progesterone rising, this is where we come our own unique person in the fact that our core temperature drops or I mean core temperature goes up by 0.5 degrees C, progesterone's super catabolic so we have a difficult time recovering and leaning up. Estrogen interferes with melatonin production so we don't sleep that well. We have a drop in plasma volume so the water component for blood is less. Our thermoregulatory responses shift so we tend to vasodilate first and longer.

We don't sweat till longer time in the heat and then our sweat rate is higher. We have less total body sodium. We can't hit intensities very well because we have more central nervous system fatigue and estrogen spares carbohydrates so we have more reliance on free fatty acids, which is not good when you're trying to do intensity. There's all these things that change. Estrogen and progesterone are just systemically effective and they are not just reproductive hormones and so many people think they're just reproductive hormones, but they're not. It's really those five days before your period starts where estrogen, progesterone are at their highest is when women feel the worst.

Steph G: Typical like PMS stuff.

Stacy S: Yeah, yeah, but it's not that it's like you have to go hide or there are dietary things that you can do to mitigate some of those problems. You can also change your training to work with your cycle so it's like you want to do your power and you strengthen those first two weeks and if you want to set a PR, you have around a 10% increase in the amount of weight you can lift right around ovulation with your estrogen surge and then that those five days before your period starts, that's when you're doing more higher rep, lower intensity stuff just to keep the neuromuscular aspects firing, but you're not looking to set PRs. You're not looking to do a massive amount of Olympic lifting because of the way that your physiology is changing. Just knowing that in training, there's a study that just came out last month that looked at doing intensity training the first two weeks of the period to ovulation and then just doing your standard three day a week hypertrophy kind of thing.

The other two weeks, in fact the two weeks before the period starts versus your standard three times a week training and the women who did it according to their period, had greater strength gains and lean mass gains and greater body composition change than those in just the standard program.

Steph G: That's fascinating.

Stacy S: Yeah, and it's all working with hormones and physiology rather than doing the traditional this is what we found in dudes, so it should go on women.

Steph G: Yeah, because I mean for, I'm assuming that most people listening to this are going to know because my community is pretty open up, but on this stuff that guys don't have that hormonal fluctuation like we do.

Stacy S: Right, right.

Steph G: They're not going to have necessarily the ups and downs, and it's so hard as somebody who's been in sports her whole life like you have or I have, there are so many factors that go into having a great performance, but yet, hormones are something we can't, can we indirectly control hormones? Sure, right, but we can't just say like, "Oh, I'm just going to go take a nap right now.", like I can't just say, "Okay, estrogen, dial down a little bit.", or, right?

Stacy S: Right.

Steph G: It's sort of like one of those, it seems like one of those almost, gosh, it's like we know it's there. We know what plays into it, but we can't directly access that maybe? I mean am I coming about that right? It's just really, we've got to almost work with it instead of just trying to directly affect it.

Stacy S: Right, exactly. One of the standard answers from physicians or coaches is to put a woman on a pill, but like I said, you're not really addressing the fact because when you get put on a pill, then you have six to eight times of bioavailability of estrogen, progesterone and then the new research is showing that you're leaving 11% performance potential on the table with CPs because of the way they affect the high intensity and the anaerobic capacity so if you're looking to really improve your performance when you get put on a pill, you're just leaving your performance on the table. You can't access it so that in itself is not the answer. Then when people are like, "Oh, well, I don't want to get pregnant." Then, yeah, well, look for a Mirena IUD or even the progestin-only pill because those two are just very low doses, have a minimal effect on your total physiology, but then those women who don't want to go on anything and you're like, "Okay, well, I have really bad PMS."

Over the course of three months, you can change that by implementing magnesium and white willow bark and Omega-3 fatty acids to counter some of the effects that these hormones have on the other systems of the body so it's not like an immediate effect, but there are ways that you can shorten the cycle, make it less intense all through natural means, through dietary manipulation.

Steph G: Yeah, so I'm interested, have you ever had some races where you prepared your ass off and you have that experience where you're like everything is great, going into it was awesome and then I get to the race and it, or the competition, I'm speaking endurance side and almost the power and strength based sports, crossfit that sort of stuff, whatever it is. You get to your performance day and you're just done, nothing is working. You know you're not, you don't feel good, you're not performing like you should. I mean in the past it seems like before

some of this new research and before things like your book have come out, women are just like, "Well, there I go. I suck."

Stacy S: Yeah, exactly.

Steph G: Has that ever happened to you where you've just.

Stacy S: Oh, yeah. Oh, yeah. Yeah, and for some reason it seems, I don't know if you experienced this when you're bike racing and stuff, but it seems like when nationals or some major A race would come around, it's like your period would come on the day. At least that's what it seems like for me and a lot of my teammates and it's like, "Oh, shit, really?", but now you have things like Clue or FitrWoman where you can track your period so that you know when it's supposed to come so by tracking your period and knowing where you are, then you can be like, "Oh, God, it's going to come on the day." Then again you can do some interventions and be prepared so that you don't feel that flatness, but up until really being able to dial it in and know it is like you'd show up and have just this really flat day and go, "What the hell? What is, I've done all the training and preparation, what the hell?"

Then it's like that night or the next day, your period comes. You're like, "Oh, fuck." Yeah, it's like now you have the tools to be able to figure it out and track it and understand and if you do it for three months and you find a pattern, you know the days you feel flat and not. Then once you get a good handle on that, then like I said, there are some specific dietary interventions that you can do to minimize that flatness.

Steph G: Let's talk about that. Let's say you're within that five day window before your period starts and you have an important event. You've been reading all year on your calendar for this. You've got to be on your A game, but you know that you're going to be within say that five day period and you might be feeling things like increased cravings, bloating, headaches. You just feel like your power isn't there. What are some of the things that you recommend for women to think about or do leading up to that, if they're in that five day window?

Stacy S: Yes, so I might give a little bit of background what actually is going on and cause this.

Steph G: Oh, yes, please.

Stacy S: Then the dietary stuff makes sense. This five day before when you have elevated estrogen, progesterone. Progesterone increases the amount of sodium that your body loses so you end up with less total body sodium. In response to that, your body starts holding on to more water and shifting it to different spaces so it goes out of your blood and to different spaces so that causes the bloating and the malaise that you have. The concept of not salting your food and not increasing the amount of sodium you're having is counterintuitive. You want to add some salt in order to shift some of that blood. The other aspect is estrogen interferes with what we call aquaporin channels in the kidney, which is fluid redistribution and uptake. If you are looking at stopping that or reducing that symptom, then

you want to use something like a baby aspirin. One of the 180 milligram baby aspirins or white willow bark because that interferes with the same prostaglandin receptor site as estrogen so then estrogen doesn't attach and you don't have this fluid reuptake and bloating, and you don't have as much water being loss from the blood.

Some of the aspects of feeling flat and lack of mojo, this is estrogen, progesterone crossing the blood brain barrier and affecting central nervous system fatigue so increases the sensation of fatigue. It alters your cognition and reaction time, and taking branched chain amino acids before your event or before you go training, will help mitigate that because of the leucine and some of the isoleucine. It affects the same receptor sites in the brain as estrogen, progesterone so then you can get your mojo back. Then if we're thinking about some of the other aspects of muscle cramping, muscle fatigue that dead [inaudible 00:24:38], magnesium helps with that because magnesium and calcium are both needed for endo or muscular aspects of muscle contraction and how the speed of that muscle contraction and we tend to lose a lot of magnesium so if you're taking magnesium, it helps with that again.

It also helps with total body inflammation and bloating so the idea of about seven days before your period starts, you're taking one baby aspirin, 250 milligrams of magnesium, one gram of Omega-3 fatty acids again because that helps with the inflammation factors that estrogen and progesterone effect and then you're salting your food so you're doing that and it just down regulates all of the bloating and the flatness and then every time you go training or you're going to do some kind of intensity, taking two grams of branched chain amino acids before and after the leucine and isoleucine levels up to mitigate that central nervous system fatigue.

Steph G: That's fantastic and I can, as you're talking I'm like, "Yup, I've definitely done that one before." One of the things that happens often for women in a sport where there's weight class, Olympic weightlifting, power lifting, martial arts, whatever it is. If you need to cut weight and you're sort of a week out, people are like just hold off on the cell and hold off on the carbs and I've done this before where it's like, I'm pretty close on weight and I need to drop a little bit of water weight and the one event in my mind that sticks out, it's like I didn't salt anything and actually it was making it worse and my friend who's an amazing doctor was like, she's doing calculations in her head, where are you in the menstrual cycle and she's like, "No, actually, add some salt to your food like right now and get that going in the reverse direction."

What do you know, it helps, but again, that's another example of you go online, you talk to your male coach and they're like, "Oh, yeah. This is what I do to drop weight at the last week." I don't eat any carbs and I just don't salt my food and I don't eat junk food and oh, I dropped five kilos and you're like, "Yeah, it doesn't work that way."

Stacy S: Yeah, one of the biggest things you can do is sugar substitutes, drop those because with the sugars, like I know a lot of people who are in physique building, body building and even some crossfit athletes, they'll drink like Sprite Zero or

something like that, which is the antithesis of anything that they should normally do right, but they're like, "Oh, I need some fluid. This doesn't have any calories.", but there are sugar substitutes in that, actually cause bloating because it perturbs to get microbiome. I was like, "Cut that out and that will help you drop weight too." There's just small things where people make an exception to the rule and it's like, "No, don't make that exception because we start introducing things like sugarless gum or anything with an artificial or sugar substitute. It perturbs to get microbiome, which causes the bloating.

Steph G: Interesting. My brain's going a mile a minute here. I'd like to ask you about specifically about hydration because I feel like this is an area where, first of all, it seems kind of easy. It's like drink more, pee more. People are like, "I've got my gallon of water. I'm walking around. I'm diligent. I'm drinking that gallon. It's almost empty. I'm peeing clear. Go me.", and you write in your book and you're a pretty vocal advocate of the fact that just drinking more isn't actually hydrating you so can you give us a little breakdown on hydration and some of the things that especially women need to look out for when they are trying to stay hydrated?

Stacy S: Sure, how much time you have?

Steph G: We have a little while, a little while.

Stacy S: Yeah, so, oh, gosh. I mean, I started my whole being pushed into media gig by creating the new category of the low electrolyte, higher, or lower carbohydrate, higher electrolyte area where you have Skratch Labs and Osmo and all the new Kliff drinks and that kind of stuff, but the basis of it is when people are thinking about drinking water, just plain water. As soon as you put water on the tongue, it kills the thirst sensation so people aren't used to being thirsty and their body isn't used to understanding what thirst is. When people walk around, they're drinking like their gallon a day, not only are they killing the thirst stimulus, but you're introducing plain water into the body and there's no such thing as plain water. You have a solution everywhere and when the water gets to your intestines, your small intestines and that's where 95% of your food absorption takes place, the plain water isn't high enough in solutes to actually be absorbed.

Your body has a dump stuff into that water in order to be absorbed and it also causes a stretch response so you end up peeing out more than you absorb so you're effectively dehydrating yourself. I tell people you put a little bit of sodium in that water that you're drinking, then your body has enough stuff in it that it is absorbed without dumping enough things in it so you end up drinking less and absorbing more so over the course of time, yeah, you're not drinking that gallon, but you're actually absorbing the fluid instead of peeing it out.

Steph G: Are there times, oh sorry, go ahead.

Stacy S: I was going to say, and then in the high hormone phase when your body is kicking out more sodium, if you're doing endurance work, this is where you have to be very [inaudible 00:30:30] not to drink plain water because your body doesn't have excessive sodium to dump into it and your thirst sensation is muted so you can't really rely on thirst. The biochemical changes that happen during exercise

alter your thirst anyway and then in the high hormone phase, it's really not a reliable factor of how thirsty you are.

Steph G: Then what do you do? Do you recommend a bodily calculation? A timing? I realize there's going to be some personal. I realize there's going to be some personal variation in there too. Some people sweat a lot. Some people don't sweat as much, but what do you generally recommend people? Do they pay attention to like a drinking schedule? Do they give themselves a set of mouth if that thirst response isn't quite as attuned as it normally is?

Stacy S: Yeah, so I never say drink x amount per hour because everything is so variable and across the menstrual cycle, that changes as well because sweat changes, environmental conditions alter things. I tell people you set an alarm. Every time it goes, "Beep, beep.", then just take a few sips. If you're riding your bike or you're running, it's like after 45 minutes to an hour, people are very conscious, "Oh, I got to take food in but also take some fluid in." It could be a couple of mouthfuls that ends up being two to three ounces every time your alarm goes off. Then that's enough to keep you at a point where you're not going to be overhydrating, and yes you are going to become dehydrated but everyone does, because you can't absorb enough fluid to match your sweat losses.

It's just about slowing down the rate of dehydration, not about stopping it.

Steph G: Along that same vein, and you mentioned a couple of products, a couple of companies, Skratch, Osmo, stuff like that. You take some of the more traditional types electrolyte replacement drinks to task in ROAR. Can you tell us why that is?

Stacy S: Yeah, so your traditional sports drink is not about hydration. It is about supplying carbohydrates in a fluid form to kind of drinking a milk shake, because the amount of carbohydrates that's in a traditional sports drink is too much, in effect that again, when you get to your small intestines, there's too much carbohydrate and stuff in it so your body dumps water into your small intestines in order to dilute it and reduce the pressure that's building from all the carbohydrates before it can be absorbed, so they're effective dehydrators. They're great for carbohydrate availability but they're not about fluid, so when people are like, "Oh yeah, I drink two bottles an hour of Cytomax or Gatorade.", I'm like, "Where are you getting your fluids?" They're like, "In the two bottles." I'm like, "No, no. That's all carbohydrates."

Then at the end of two hours, don't you feel bloated and kind of off and you don't want to drink it? Oh yeah, but that's the nature of going hard. I'm like, "No, it's the nature of what you're ingesting." People begin to expect things to be normal like the bloating and gassy feeling at the end of the race or feeling a bit overdone with sweetness and it's all about stuff that you're taking in not working for you.

Steph G: Yeah, certainly you're right. Some sports increase that slush factor. You're out there running around doing XTERRA or whatever and just sitting stationary on a bike for a long time and I think running was always really, that was a lot harder

for me in terms of figuring out what I could eat and drink that wasn't going to make my gut spill like they were sloshing around.

Stacy S: Yeah, or they're going to fall out at the end of the race.

Steph G: Yeah, so one of things I wanted to ask you about and you already mentioned BCA so I wanted to ask you about protein because again, I feel like most of the time, I read things that sort of aims at athletes and not even necessarily women in particular and their protein recommendations are mindblowingly low and I'm just like, "I want to shake someone.", so when I ran into your book that sort of what you recommend in giving people, I love these nutrition makeovers that you do for people because I think a lot of higher performing athletes, they're like generally a lot of them are very cognizant. They're not eating germ food 24/7. They're like, "I'm eating healthy foods.", and yet some of the things that you talk about in the book is like we're missing out on some big things here, big dial movers.

I'm interested if you can sort of give us your, I was going to say campaign speech, that's not it. Give us your elevator pitch for protein and why it matters so much especially for women.

Stacy S: Yeah, gesture is catabolic and you have that elevation of two weeks. Two weeks of the month, you're in a relatively catabolic state and then when you are training and you have an elevation of cortisol, cortisol's also catabolic so when you're looking at the general recommendations that are put out by various agencies and such at that 0.8 to 1 gram per pound of body weight being the very high end, it doesn't quite work for athletes, in effect that we want to stop the catabolism and build lean mass. Then the other aspect is women need more leucine because of some of the sex differences and muscle structure and amino acid uptakes. When we start looking at the catabolism and then the lack of leucine, women get into this naked of nitrogen balance such that they are actually building lean mass.

When you're looking at the research that's out there that has been done and you see that women need more protein, especially female athletes are very body aware and tend to cut calories, the more protein that you have, the more lean mass you develop and the less endocrine dysfunction that you have. Go protein is all I have to say.

Steph G: How do you work with your clients who are like obviously a lot of them are endurance athletes and power to weight ratio is a thing, right? Being light but being powerful, I can think of some items for [inaudible 00:37:05] fit into a weight class and so you're trying to lift the most out of the lowest weight possible. How do you help some of your clients understand that their fears about, if I eat some protein, if I eat more protein and I do some strength training, which you are also an advocate of, I'm going to get bigger and I'm going to get slower.

How do you help or do you help women navigate some of that stuff?

Stacy S: That's kind of twofold. I'm right in the middle of this research project that's looking at endurance athletes and team sport power athletes and low energy availability,

and this is becoming a huge issue right now in female sports set, and particular for that reason that you're discussing, they don't want to put on weight and they're very conscious of calories and a lot of people skip food before training or skimp on training calories and even if I don't have a resting metabolic rate or I'm not talking about low energy availability, I look at when people are eating. I'm like, "Look, you're going not training, you're going in below and then you're not putting anything in, so what is your body doing?" It is eating itself for the most part to provide that fuel and it's also increasing the amount of stress hormones and if you have stress hormones, you're not going to be able to recover because stress means go and go means I need fuel so you're going to be in this continuous catabolic state, and the issue with that is your body's using fuel in this fight response and so by the nature of that, looking for really compact fuel, it's going to put body fat on.

If you have this high stress, low calorie intake during these times of high stress, your body's response is put on body fat. No one wants to put on body fat. When you get people to understand that the best way to manipulate your body composition and to get better is training with fuel or fueling for your training because this aspect of training isn't performance. The training part is breaking your body down and then giving it the tools to build itself up to recover so the next time it encounters that stress, it's not as stressful.

Getting women to understand that that whole breakdown cycle is the part of the training, that you're not racing to perform in training, you are breaking your body down to become stronger. How do you become stronger? You could go stronger with fuel. Then when I take him into this whole concept of low energy availability, you have a certain amount of food and fuel that you need for general health and then you have this training on top of it and you have stress on top of that. If you're just seeing enough calories and you think you're eating clean just for health, you're going to get in this low energy availability. It's not necessarily calorie restriction from a cognate point of view but the fact that you are not taking in enough calories to support your training, your resting metabolic rate, general health.

You get into an endocrine dysfunction. Your menstrual cycle starts to go awry. You start not sleeping well. You're really easy to become overtrained, and then the offshoot of that is extra abdominal adiposity and slow, your performances downgrade and you're like, "Whoa, I'm getting fat, I'm getting slow, I better cut my calories." It's the opposite of what you should be doing. The first thing is like, "Okay, well a lot of people are carb, they have a fear of carbohydrates so let's put some protein in so you're doing protein, put some protein in. It's going to boost your calorie intake. It's going to help mitigate some of this stress hormone. It's going to downplay the push for putting a body fat on, so when they start saying, "Oh, I'm eating more and I'm not getting fat. I'm getting leaner. I'm getting more powerful.", then we start adding some more carbohydrate in and they're like, "Wow, I'm sleeping better." It's kind of that self facilitated learning but the first step is getting people to understand that the breakdown process of training requires fuel to build itself back up.

Steph G: I love that. That's such a good way of explaining it and putting it into context. I was going to ask you about very, very low carb diets are super popular. They've been around for a long time and certainly there's lots of variations of that. There's very low carb paleo. There's keto, there's whatever, a low carb vegan. I mean you can make it into any conversation you want in terms of labels. Give us the rationale behind why very low carb diets and female athletes just generally don't mix in your opinion.

Stacy S: They don't mix, yeah, so this brings back to evolution. Think about this us as hunter gatherers and low food availability. In that context, the women of the tribe were to stay in and protect the children and the men of the tribe were supposed to go out and find the food. In low calorie availability, the fight response comes out in the man so they get leaner, they get stronger. They get more endurance and become metabolically efficient, low carbohydrate. This is what you're finding now in the global set of people who are following in the high fat, low carbohydrate aspect. From the evolutionary perspective, men do really well on that because they have some fat, they go out, they fight, they find the food. They lean up. They get stronger. It's all about finding the food and beating the beast, so to speak, but then we come back to the women who are taking care of the kids or taking care of the house or the tribe or whatever, not advantageous for her to be reproductive, also not advantageous for her to require more food because in the scheme of things, low on the totem pole.

In today's society, when you have low carbohydrate, the body reverts back to that. You get menstrual cycle dysfunction, endocrine dysfunction, thyroid dysfunction because your body is not going to be primed to reproduce and take care of something else. Your body then regulates itself so it cannot reproduce. The other aspect is with low carbohydrate and low calorie intake, you end up putting on more body fat because it's a fuel conservation. I have people who come in and go, "Look, I'm following this low carbohydrate, high fat diet or I'm following low carbohydrate paleo with my husband or my partner. He's leaning up. He's getting fit. He's getting fast and I'm getting fat and I'm getting tired and I'm getting slow."

Let's just bump up some carbohydrate and see how you go because we need a minimum amount of carbohydrate for endocrine function. If you don't have proper endocrine function, everything else goes to shit, so just boosting up little bit of carbohydrate so that you have that optimal amount for menstrual cycle hormonal function that men don't have, is what boosts the women's performance and helps her lean up.

Again, it comes down to sex. All this stuff has been done on men but then when you have to add in that hormonal health that women have, you need that carbohydrate.

Steph G: Yes, thank you for explaining that and I hope that that is helpful for women listening who, the same story plays out, sort of in the cross that we're lifting with women and sometimes they'll go lower carb for a little while like things are moving in the positive direction and then either they plateau or things start to reverse, body composition, abdominal fat, stuff like that and they're like, "I don't

know what's going on." We do more wads this weekend, less carbs and it's the reverse. Thank you for putting that into scientific perspective. Then the other thing I would like to ask you about is fasting, because again this is another one where it's like maybe I am somebody who trains early morning. I know you said you get up about 5 and do some stuff before the world awakens. I do three days a week, I do jiu-jitsu at like 7 a.m. so there are a lot of people that because of their lifestyle, they need to train in the morning. They may be fasting unintentionally I guess or there's definitely a subset of women. I get asked all the time about intermittent fasting and then again mixing that in with athletics and performance.

Can you speak to that, about intermittent fasting and what your opinion is on that?

Stacy S: In today's society, there is no real set meal times because everybody's busy, busy, busy, busy. You might have breakfast at 10 a.m. and you didn't have anything when you first got up and then you're hungry at 10 o'clock when you're ripe for bed so you have something else to eat, so there isn't any real structured fasting per se for health. If we look at it from a health perspective, if you stop eating at 8 p.m. and then you don't have anything again until 6 a.m. when you wake up, that's fasting and that is very optimal for health and body composition endocrine function.

When you start looking at specific intermittent fasting, where you don't eat anything except for a four-hour window and some other things, some of them are three days of real food, four days of fasting or timed fasting, that creates endocrine dysfunction especially in women. Part of it is this uprise of cortisol because when you're stressed and you don't have food available and you're trying to get on with your life, you have a lot of adrenaline and cortisol that's released and both of those are catabolic and they also signal you to put on body fat, so not advantageous. If you're getting up at, like me getting up at five to go out for a run or something before the world awakens, I go out but I've had some almond milk and some protein powder and coffee. It might be 100, 120 calories at the most but it's boosting my blood sugar. It's dropping cortisol. It's not oversupplying calories so I'm still going to get some of the calorie deficit that I might be looking for, some metabolic changes for adaptation, but it's all about down regulating these catabolic hormones.

You got to look at intermittent fasting from a twofold effect. If you're looking at it for health, it's more about eating at regular set times during the day and having that sleep fast, so that you know you have between eight and 12 hours of no food intake but that's normal. It's like after dinner, don't have food and then you wake up and you have breakfast. That is optimal fasting. If you're looking as a guy specifically to become more metabolically efficient, then having one or two days of training in the morning when you go out without anything except for some green tea or coffee is fine, but for women, you got to downplay that cortisol because again, that endocrine health that you need. Intermittent fasting is not ideal for women, again because of that endocrine health that we have to watch out for.

Steph G: Absolutely. Thanks for sharing that too. There are a lot of questions, and it seems like again, I think a lot of times women are, they're not like, "Okay, let's see how far I can take things and fast and do very low carb and I'm going to whatever." They're going to withhold caloric intake during longer periods of training. I think we just get drawn into that real world. I mean honestly there is like it doesn't take much to go and find a website with a shirtless guy with a six pack. He's like do my nutritional thing and then we're stacking these things on top of each other, which is its own other complicating set of circumstances but I appreciate and I think the listeners are going to really appreciate the physiological point of view here because sometimes they hear me say it and I'm just like, "Just don't do what that guy's telling you to do." There are always people who fall at the ends of the bell curve, if you will, if you can get away with it but I just feel like it's giving women a real disservice to not talk about the flip side.

The last thing I wanted to ask you about and I do actually have a large portion of my audience who always ask about this, is to talk about menopause because I'm heading there. We're all heading there eventually and I think first of all, this community feels very underserved by the online world and you have a whole chapter in your book devoted to this so I'm interested if you can give us sort of a quick primer on why things change, what women in menopause typically struggle with. We've all heard and I've seen on TV hot flashes and stuff like this but there's a reason why those things happen, and more importantly, how do you recommend women who are in that phase of life adjust their nutrition and their training to work with their physiology instead of against it. You have some really interesting stuff that you write about in the book.

Stacy S: Yeah, so you know as little research as there's been done on premenopausal women, there's none on the master athlete or women who are not sick in menopause because most menopause research has been done on your cardiovascular health and cancer and all that kind of stuff, but there's a small subset and you start doing the research and start looking, you're like, "Yeah, menopause is another phase of life that's completely different from prepubescent and puberty and premenopausal." The idea is that you have the sudden drop and reduction of estrogen, progesterone production, you have a small rise in testosterone but after all the years of menstrual cycle perturbations of estrogen, progesterone, now you have none and your body starts to kind of downgrade in bone health and muscle health, so those are the two key factors. You can lose up to 1/3 of your bone mass the first five years after the onset of menopause.

You also lose a lot of muscle power and integrity, so the first thing that a menopausal or premenopausal woman should think about is maintaining bone and muscle integrity through power work, through plyometrics, through neuromuscular stimulation. Don't do the long slow stuff because that's not going to help you. You want to preserve muscle mass and bone strength, it's all about the body reaction time doing the plyo, doing the more power intensive work, sprint work. Start it early before you start getting to premenopause because it's not like, "Oh, I'm a long slow endurance, older athlete. Now I'm going to become a sprinter." It doesn't work that way. You got to keep implementing it. Strength training is super key. You want to maintain that lean mass and in the same vein,

you become a little bit more catabolic. You need more protein. You need more leucine.

One of the biggest services to the peri and postmenopausal woman is telling them to eat soy and use isoflavones. Don't do it. You do not need it. There's not enough leucine in soy. It's not a very good protein source especially for a peri and postmenopausal woman. I work with a lot of vegans who are in that timeframe. They're eating all the fake meat. I'm like, "No, don't do it. It's all processed in soy and it's like no, let's look at combining pea and quinoa and hemp and adding some vegan branched chain amino acids." It's the biggest thing that you can do to help your body preserve it.

The other thing about the temperature and temperature perturbations is you become less heat tolerant and part of it is your reaction time for vasodilation and constriction changes, so you're slow to vasodilate, you're slow to vasoconstrict so it's knowing that you have a very hot event or you're going to experience something that's in the heat, then you're precooling by drinking something that's cold. If you have the onset of a hot flash coming, put your hands in something that's cold or put the soles of your feet on something that's cold to stimulate that contraction so that you don't have this huge vasodilatory heat response.

Then like in the two second elevator pitch of what a menopause woman can do the best is plyometric protein cool, that's it. That's what you do and that's what helps your bone strength to your lean mass, your performance and those are the things that you concentrate on.

Steph G: So important, and I know there's one other thing that you mentioned about carbs, about fructose. Can you give us a little insight into that?

Stacy S: Yeah, so for menopausal women also, you become very sensitive to carbohydrates so you want to get your carbohydrate from primarily vegetables and fruit and then ancient greens, but in general with fructose in women, we absorb less fructose than men, so per 100 grams, which is a lot of fructose, men can absorb 66. Women can absorb 26 grams. We absorb half of what a guy does, and I'm talking about straight fructose in all the sports products. I'm not talking about fruit because we're not as smart as nature. Fruit is very smart in the fact that it's wrapped up fructose in pectin. Pectin's protectant because it's a fiber so we don't have that much of a worry, but if you're looking at things that are sweetened with fructose or added fructose, agave nectar, which is very high in fructose, stay away from it. It causes a lot of issues from a gut perspective. It changes the microbiomes that you have perturbation in the microbiome. It causes chronic fatigue. It causes gut issues, fatty liver, just yeah avoid fructose ingestion.

Steph G: Thanks for giving us that little primer on menopause. I know there are women who are like, "Okay, I need to go learn more about that.", so I'm going to make sure there's a link to your book in the show notes so that they can go and grab it because honestly, you guys that are listening, we barely, there's so much more stuff that's in this book that we did not even get to and I don't want to keep Dr. Sims all day although I'm sure you can keep learning out on this stuff. All right,

I'm going to cut it off there because I'm just going to keep talking if I don't but I wanted to do the rapid fire questions section with you.

Stacy S: Yeah.

Steph G: All right, are you ready?

Stacy S: Yep.

Steph G: Coffee or tea?

Stacy S: Coffee.

Steph G: A race you wish you could get a do over on.

Stacy S: XTERRA Worlds when I was pregnant.

Steph G: You tell that story in the book so that was a good story. Favorite splurge meal?

Stacy S: I don't know because I'm not a foodie. That's hard.

Steph G: Comfort, well okay or like what's a comfort food for you?

Stacy S: Chocolate chip cookies, I love them.

Steph G: I don't know anybody in the world that doesn't love like a good choco chip cookie. You're talking about strength training earlier, your favorite lift, like favorite strength training thing that you do.

Stacy S: Dead lifts, dead lifts.

Steph G: Okay, and least favorite?

Stacy S: Snatch.

Steph G: You and most other people for sure. An area of personal development that you're interested in lately?

Stacy S: Mindset.

Steph G: It's a big one.

Stacy S: Yeah.

Steph G: Advice you would give your teenage self?

Stacy S: We are all unique but somehow we followed generalized information. Don't follow the generalized. Look at yourself.

Steph G: That's good, and then the last one, in your opinion, the most important ingredient in building unbreakable humans.

Stacy S: Being true to yourself and listening to your gut because especially in this globalized society where you're bombarded with so much information, it's really hard to find the truth from the fiction so listen to your gut.

Steph G: I love that, well you've passed the rapid fire section with flying colors, so congratulations.

Stacy S: Awesome, thanks man, love it.

Steph G: This is going to be my sort of last pitch, guys and girls, go get ROAR: How to Match Your Food and Fitness to Your Female Physiology, for Optimum Performance, Great Health and a Strong Lean Body For Life. If you're a guy who's a coach, trainer, whatever, if you're a woman who competes or not, you just like to be active, you want to better understand how the female body works and how to eat and move your body, so so good. There's other stuff in here that I guess we really didn't talk about. Bone health, gut, flora, meal plans, how to deal with heat, cold and altitude, like so much more detail so if this is interesting to you, please go pick up a copy of ROAR. Dr. Stacy Sims, this has been such a treat to have you on the podcast and I'm so thankful that you gave us some of your time today. I really, really appreciate it.

Stacy S: Thanks again for having me. It's been lots of fun.

Steph G: You're welcome.

Go grab her book on Amazon. I know you're on your phone. Open up Prime. Get it sent to you. The book is called ROAR, and if you want the show notes for this episode with links to the stuff that Dr. Sims and I talked about, please visit stupid easypaleo.com. I am so honored to continue to bring this show to you every week and to introduce you to these wonderful thought provoking inspiring amazing guests, and as always, I'd be honored to have you review and subscription on iTunes. Just click the subscribe button. I love hearing your thoughts on Harder to Kill Radio. It makes my day every single time. All right, we'll be back next week with another wonderful guest. Please stay tuned for that and until then, stay healthy, happy and harder to kill.