Danny Lennon: Hello and welcome to Sigma Nutrition Radio. My name is Danny Lennon and you are listening to Episode 135 of the podcast. For those of you who are new to the show, welcome. This is the podcast that gives you weekly access to in-depth interviews with leaders in evidence-based nutrition and related fields. And for those of you regular listeners, thank you so much again for downloading the show and for your continued support. I can't tell you how much it means to have you continually support the show and find value in it. It means a lot to keep hearing that.

On today's episode, I'm joined by Dr. Nicola Rinaldi, and Nicola has a PhD in computational and molecular biology from MIT and has done academic research in that area, but over the past three years or so Nicola has taken that science background and her skill in trawling through research to put together evidence-based information on hypothalamic amenorrhea, which is an issue that she herself has battled in the past and is something, as we've mentioned before, is becoming increasingly prevalent and is something that many of you out there have probably dealt with or maybe are experiencing right now, or if you're a coach and practitioner you probably have a number of women suffering from this is as well. So, hopefully we're going to get into some really important information coming from an evidence-based perspective on this.

The show notes are going to be available at SigmaNutrition.com/episode135, and when you go there I'm going to link up to all the studies that Nicola mentions. So for any of you who like to go back and look at the PubMed links and look at the actual research papers themselves, I'll link up to everything we mention in the show as well as where you can get more information on Nicola's work, check out her book, and then also get a transcript to this episode as well. So that'll be at SigmaNutrition.com/episode135. And with that, let's get into the show.

Hey Nicola, welcome to the show.

Nicola Rinaldi: Thank you so much. It's such an honor to be on here. I'm really excited.

Danny Lennon: I'm super-excited for this conversation because as I've previously mentioned to you, this is an area that has been touched on in the show before and there's all sorts of information around Internet right now around this topic of amenorrhea, which we're going to get into in a minute, and I think some of your work has really been useful to people especially coming from an evidence-based perspective as well, which is obviously a kind of core fundamental piece of this particular show.

Nicola Rinaldi: Yes, definitely.

Danny Lennon: But before we get into any of those specifics, maybe can you just let people know a bit about yourself and your background and kind of what has led you along this kind of route?

Nicola Rinaldi: Sure, absolutely. So I did my PhD at MIT starting in 1999 and I sort of…I hadn't really been much into exercise when I started but I found the sport of ice hockey, which I absolutely fell in love with, and one of my coworkers was a volleyball coach and so I joined a volleyball team, and I just kind of added more and more exercise over time while I was doing my PhD. My husband is a consultant, and so he was away four to five nights out of the week. So that meant a lot I had a lot of time to myself and so I was at the lab sometimes until one in the morning, but I would take breaks to go to the gym or hang out with my friends or whatever. So that was all great and I enjoyed doing my PhD. I learned a ton.

One of the things I really learned was how to read scientific papers and how important it is to understand the basis of what you're talking about, and otherwise the end of my graduate career my coworkers decided that they would go on a diet and I was like, "Oh, I have some love handles to lose. That sounds like a good thing." And I was starting to think about

having kids and getting pregnant and I read a lot of places online. I was reading stuff about like having healthy pregnancies and having an easy time getting pregnant, and a lot of the information said “lose weight, lose weight, lose weight,” so I was like, “Oh, okay, this is going to be super-healthy. I'm going to lose some weight. It'll help me and I'll have an easy time getting pregnant.” And so we all decided to limit our calories.

And that would have been fine except for the amount of exercise that I was doing. So I was exercising about two hours a day by the end of my graduate career and when I started limiting my calories I lost weight like it was going out of style, and I thought, “This is fantastic!” I was getting stronger. I felt good. And then I went off the pill and I didn't get my period, and so I sort of thought, “Well, that's funny. All this stuff says I'm being healthy and I'm doing the right thing.” And so I went to see my doctor and she said, “Oh, that sometimes happens. People get off the pill and it can take a few months for stuff to regulate.” And so like, okay, no big deal. She said, “You might want to cut down on your exercise a little bit,” but I didn't really make a big deal out of it.

So a few months went by and I still wasn’t getting my period, and so then we started doing more testing and I started reading stuff online, and I came across a fair number of studies that sort of made me realize that maybe there was a correlation between my exercise and eating and not getting a period. And actually, I had gotten a little obsessive about it. I was tracking everything in an Excel spreadsheet and I would never go over my set number of calories a day and I was kind of stoked about how many calories I was netting when I subtracted off my exercise. And I was reading the Minnesota starvation study. I don't know if other listeners are familiar with that. It was a study in the 1940s where they were trying to look at how starvation that was going on over in Europe might affect people and then how to refeed them, and reading some of the information about that study really opened my eyes to what I was doing to my body and my health.

And so it was a combination of things and I kind of slowly dug my way out of that obsessive hole and managed to increase my calories a bit and cut my exercise a bit, and eventually I ended up getting a period, but then things weren't going the way they were supposed to and I ended up doing fertility treatments that all failed. So this is about 18 months after I first went off the pill. I finally hit…I gained quite a bit of weight. In fact, I had gone back to my original weight and then a little bit more. And we were going to do IVF because all the fertility treatments had failed, but I took a

two-month break because we were waiting for insurance to kick in and in that two months I did ovulate on my own and actually got pregnant. So I was really lucky.

And then from there, yeah, I was pregnant but I was put on bed rest because I was having early contractions. And I found an online message board about other people suffering from amenorrhea, and that's when my passion really came to fruition. I really enjoyed sharing the research that I had done and my knowledge and my story and helping to support other women through recovering. So that was about 10 years ago. I've been posting on that message board ever since. And after a while everyone was like, “You know so much about this. You should write a book,” and eventually I was like, “Yeah, I should,” and so that was kind of the genesis of my book. And it took three-and-a-half years, which was way longer than expected, but I've gotten really great feedback on it and the science is really accessible and there's a lot of support in there and ideas about things for women to do to help recover, and so I feel like we kind of nailed it and I'm really excited to share it with everybody.

Danny Lennon: Yeah, and like I had mentioned to you, there have been listeners of this particular podcast who I think are, like we say, evidence-based and like to see science behind it who have read that book and actually have made recommendations for you to come and discuss this stuff based on that, so I think that speaks volumes for it. Nicola, if we start off maybe first to get everyone clear and on the same page, how should we define this term hypothalamic amenorrhea? And then maybe can you get into then some of the factors that play into that?

Nicola Rinaldi: Sure. So it's actually a little bit hard to really define hypothalamic amenorrhea because technically it's a diagnosis of exclusion. There are quite a number of things that can cause amenorrhea. There's primary amenorrhea where a woman or a girl never gets her period to start with. Some of that can be due to over-excercise and under-eating or high stress. Some of it can be due to some chromosomal abnormalities or physical abnormalities. Any kind of amenorrhea, one should definitely go and see a doctor to get checked out because there can be any number of things that are going on.

And then the second type of amenorrhea is secondary amenorrhea, and that's where a woman has gotten her period in the past and then stops getting it for some reason. There can also be multiple reasons for that. There can be, again, physical abnormalities. Especially after pregnancy,

there can be something called Asherman syndrome, which is basically where there's scarring in the uterus that prevents a menstrual cycle. Oh, it doesn't prevent the cycling – it prevents the bleeding. There are some other medications that can cause amenorrhea. There is polycystic ovarian syndrome, and then there's hypothalamic amenorrhea. So a lot of them have somewhat similar symptoms, so I think it's important to, like I said, see a doctor and get some testing done. We do have a chapter in the book where we talk about diagnosis and all the testing that you might expect to be done.

And so hypothalamic amenorrhea itself is basically the hypothalamus is a region of your brain that controls much of the hormonal output and it can be shut down by any number of circumstances, and that shutdown can affect…it basically affects all the systems that the hypothalamus controls. So it controls your temperature, it controls sleep, it controls eating and whether you feel full or hungry, and it controls your reproductive system. So in hypothalamic amenorrhea, your hypothalamus is basically shut down so that it then goes and shuts down your reproductive system and the hormones that normally will cycle in women. There's gonadotropin-releasing hormone that releases follicle-stimulating hormone, FSH, and luteinizing hormone, LH, that then downstream affect the ovaries and the uterus. So it's all kind of interconnected, but that's the basic of hypothalamic amenorrhea, is the hypothalamus has been shut down, which in turn shuts down the reproductive system.

And that's true in men, too. The hypothalamus controls things in the same way. It's just that in men there isn't the monthly period that gives the signal that something is maybe not quite right.

Danny Lennon: So with those factors you mentioned, so you discussed around…we've already said things like high months of exercise in combination with restricted eating or calorie restriction, so something that's generating a negative energy balance, and that is obviously going to lead to a decrease in weight and body fat levels. Is that energy deficit over a period of time required for hypothalamic amenorrhea or does, say, some of those other factors like say stress, can they alone induce it or does it need to be something that causes a negative energy balance over a long period of time?

Nicola Rinaldi: Stress can absolutely shut down the menstrual cycle on its own without any negative energy balance, but it tends to be a combination. So I like to say there are five factors that can cause HA. There is restrictive eating, not

even necessarily under-fueling but sometimes just restricting food groups, and we can talk a little bit more about that. So restrictive eating; exercise, which can be excessive or it can seem fairly normal; stress, again, either acute stress or chronic stress; weight and weight loss. So as part of my book I did a survey of about 300 women who had experienced hypothalamic amenorrhea and I found that 82% of them had lost 10 pounds or more at some point in the past. Some of it was fairly recent like me, others it was it further away, but it seems like that tends to have some kind of effect on your system that can be fairly long-term.

And then the fifth factor is genetics. So there have been a couple of studies that have been done that have found mutations in some of the proteins that are part of the whole menstrual cycle of hormones, and so that's another part. It can be hard because two women can be doing exactly the same thing and one cannot have her period and one does have her period, and so I think that genetics plays some part in that difference.

So those five factors, any one of them alone can cause HA, but there seems to be synergy in that if you're doing two or three of them you're much more likely to lose your period. So there was a study done in monkeys by Nancy Williams that really illustrated this. They took two groups of monkeys and one of them they exposed to exercise plus restricted calories and the other one they exposed to stress plus exercise plus restricted calories, and the group that was exposed to the stress and exercise and restricted calories, I think eight out of 10 of them lost their periods, whereas in the other group only one or two had menstrual cycle issues. So that really speaks to me to the synergy between these five factors.

Danny Lennon: Yeah, and especially I suppose when we consider the practical implications of this, typically it's going to be some sort of combination of those because when you look at those factors, for example restrictive eating, usually if someone has a restricting eating behavior it's because they're trying to change body composition and therefore they're probably losing weight and losing body fat, and they're probably going to be doing a ton of activity on top of it. And then if they're also worried that there's not the change they want to see, for example, that can generate its own stress.

Nicola Rinaldi: Mm-hmm.

Danny Lennon: And so it's just this combination of things. So particularly for I think a practical perspective and for anyone that's working with people who may have come across this issue, probably most likely it's going to be some combination.

Nicola Rinaldi: Yes.

Danny Lennon: So if we look at a couple of those, the first one you mentioned was restrictive eating, and we'll come back to, say, negative energy balance and calorie restriction in a minute because I think people will have heard of that one relating to amenorrhea before, but you also mentioned that it could be something different like elimination of food groups. So are we talking there of something like someone that goes on a super-low-carb diet?

Nicola Rinaldi: Yes. So there are…anytime you eat a meal, there are signals that are sent from your stomach, from your small intestine, from your large intestine, that tell your hypothalamus how much you've eaten and what you've eaten because there are different hormones that are up-regulated by, say, carbohydrates or fats or proteins. So your hypothalamus has a pretty tight rein on what's going on in your body. So if you're restricting carbs, I think everybody knows that means your glucose levels aren't going up as much and your insulin levels aren't going up as much, and your hypothalamus senses that and so it actually restricts your hypothalamus to some degree. So for some people, just going on a low-carb diet can be enough to suppress the hypothalamus particularly if you're doing a lot of exercise or you're highly stressed. So I encourage women as they're trying to recover their periods to loosen all their restrictions not only on the amount that they're eating but also to try and incorporate foods from all the different food groups because I think it's really important that your hypothalamus gets all of those signals back and working and isn't continually suppressed by any one of them.

Danny Lennon: One thing that I think is a common question that women who are suffering from hypothalamic amenorrhea often have is why their cycle hasn't returned even after they've got to maybe a weight that they've previously had a cycle on or they've pulled back exercise to a previous level, and I remember reading something that you stated was the reason for this in that it takes more of an energy surplus to get the hypothalamus to turn back on than it actually does just to keep it going once it has restarted. Can you go into that in a bit more detail and just kind of explain the context behind that?

Nicola Rinaldi: Sure, and that's absolutely something that I have seen, is that women tend to need to get to a slightly higher or cut down their exercise a bit more than where they were when they cycled in the past and also where they need to be to continue cycling once their cycles have restarted. I think of it kind of like the activation energy of a chemical reaction. I have a blog post that I wrote on this that has a nice little graph that makes it really easy to see. So, basically, it takes a little bit of an extra push for your hypothalamus to turn back on than it does for it to keep going, because once everything's working your hormones are cycling normally and you have the increase in FSH that leads to increase in estrogen that leads to increase in LH and ovulation and increase in progesterone. And so all of those hormones are kind of cycling together and pushing each other around, but when you have HA those hormones are all at a baseline level, so I think it takes a bit more of a push to get them actually started cycling again. And I've seen it. I haven't read any research on it but that's just been my experience and it makes a lot of sense to me that once you've got that cycle going it's much easier for it to continue than it is for it to start in the first place.

Danny Lennon: Right, yeah, I think that's a really important thing to consider especially trying to loosen some of those restraints that people have. If they get the idea that, yeah, at least for a short period of time to regain it we're going to have to maybe go beyond where you'd hoped or you'd planned or you've previously been to get that thing going. And so if we turn to like the pragmatic side of this and we have women that have this issue and are trying to reverse the problem once it's been established, where do you start with that recovery process? Is that a matter of obviously first trying to work out what their main causal factor is? And how do you get people to think about how they should start making that recovery process in trying to reverse some of these issues?

Nicola Rinaldi: It seems like for a lot of women once they understand what the factors are that are involved in HA they can pinpoint what their issues are. I mean, obviously there are some women who I think are fairly deep into eating disorders and that need psychological help, a therapist, but for women who are more sort of as I was on the disordered eating part of the spectrum, so not necessarily having the mental aspect of it, it's more just you think you're doing the right thing and then you find out that you're not, I've found that women are fairly easily able to say, "Okay, these are my problem areas." Now, fixing them on the other hand tends to be a lot harder and it's one thing to say, "Okay, I need to eat more," but it's a

whole different ball of wax to actually go out and do that. And some women can immediately sort of add on the extra calories that they need; others, including me, it takes a little while to get around all the things that are pushed at you by society about what's healthy and what's not healthy.

I went to a nutritionist when I discovered my HA and she gave me some ideas of how to increase my calories without freaking out about it. I mean, she suggested like 2% milk instead of skim milk and I was like, "Whoa, that's a great idea! I never thought of that one," and adding olive oil to when I was cooking. I sort of grew up in the eighties when everything was low-fat and fat was the enemy, so for me adding olive oil was something that hadn't really occurred to me because I was just so in the low-fat mindset. Other ideas she gave me were eating a handful of nuts as a snack in the afternoon. So it was hard to do those things when I first started my recovery. I was measuring how many nuts I had and making sure that I wasn't going over the number of calories she told I should be having, and just as a side note, the number of calories she told me was probably about 500 to 600 less than I actually needed, so what I was still aiming for was to lower it than it should have been. I feel like from the practical standpoint it's support. I think women need a lot of support to make these changes, and so I think that finding a group to help other people who are going through the same thing and can kind of help push away some of the ideas about what's healthy that is not necessarily true when you're trying to recover from hypothalamic amenorrhea, if that makes sense.

Danny Lennon: Yeah. No, it makes a ton of sense. And even the stuff you mentioned around how to frame some of those changes, it's certainly something we've seen in practice with our coaching here that when we've tried to get someone to increase caloric intake just because purely they've been on way too little calories for what they're trying to achieve and maybe they're a bit resistant to increasing that, just telling someone to eat more food often doesn't really work in that case. Whereas, like you say, if it's a food substitution it's not really seen as like, "Oh, I'm eating way more calories." It's a substitution, this food for that, and we just know that that's going to add more calories. And I think that's just keeping in mind, for maybe practitioners listening, just the way you frame certain changes can be really important.

And so with the whole increase of caloric intake, if someone's being, say, restricting calories and they're being in negative energy balance for a period of time and now we're starting to increase those calories, is it a case of where we're just getting that back up more to a maintenance figure or

do we need to have enough of a surplus that they regain body fat and regain body weight for that cycle to kick back in?

Nicola Rinaldi: In my experience, it takes regaining weight and body fat. I think it depends on where you're starting from, but women who have a—so I think of the fertile zone as being BMI of 22 to 23, so that's generally where I tell women to aim. A majority of those who have HA are lower than that. From my survey, the median BMI was about 19, which is technically normal, but I definitely see that as part of the issue with women that have hypothalamic amenorrhea. And it's interesting, so many women that I've helped recover have found afterwards that they actually think they look better. Their spouses certainly think they look better. Our society has somehow gotten to a place where the ideal figure for women is sort of this prepubescent body almost and we don't tend to celebrate curves, and women, we're kind of trying to push away from that, and I think it's great to be healthy and muscular but it's important to also be fueling yourself adequately. And I think we often tend to want our BMI or our weight to be lower than our body's set point, and so in order to do that, that takes forced reductions in calories and exercising like a fiend that ends up shutting down your hypothalamus and your reproductive cycles. And it's especially negative when you want to get pregnant, obviously, but even more than that, there are so many other health consequences of the estrogen that you're not getting because you're not cycling. I think it's important for women to be aware of those as well. So things like brittle bones, which it's…I mean, you might get stress factors as a young woman or a middle-aged woman, but it really comes to a head when you're older, aAnd a friend of mine has a mother with osteoporosis and she doesn't have to do any…she doesn't have to fall to break a bone, she can step off the curb in the wrong way and she did that and broke her ankle. And so things like that, we don't tend to think about it at our age—I'm in my early 40s—but that's something that's going to be really important later on.

Then, there are also suggestions based on studies that have been done in women who have had their uterus and ovaries removed—so that's called surgical menopause—that suggests there can be effects on the heart, so a higher chance of heart disease and also earlier neurological dysfunction, so Parkinson's or dementia. So there are a lot of negative health consequences besides just the missing periods that I think people need to be aware of and take into consideration.

Danny Lennon: Yeah, and that's…I mean, I think that the real big issue, that it's not just the missing period. That's almost just one of the symptoms, whereas there

are lots more potential issues that can arise that are much more serious. And so when we look at that recovery process, what does the recovery timeframe look like? Is there any such thing as a typical timeframe people should be aware of or are there correlations between the length of recovery and how long they have had issues or have been missing their period, or do other factors control how long that will take to recover in your experience?

Nicola Rinaldi: So this is another issue that I just posted on about in my blog, interestingly enough. So as part of my survey I asked those questions and I just put together a little graph because somebody was asking me in one of the Facebook groups I'm in, "Is there a correlation between length of time I was missing my period," this particular woman had been missing her period for 15 years, "and how long it takes to recover?" And so I graphed those data, I think you have them for about 175 women, and it really looks like there is not a correlation. The average time to recovery is about eight months, the median is six months, so that means there are few people that took a lot longer to recover and in those cases it was sort of they started eating a little bit more and exercising a little bit less but didn't really go what I call "all in." So I think all in is really ramping up your eating and cutting out high-intensity exercise, and if you do that the median time to recovery is about six months. It can be shorter. I've seen women recover in six weeks. It can also be longer and some of that I think is based more on genetics and other factors rather than exactly how much you're eating or how much you're exercising. Because, I mean, stress can be a factor too and I think that's often a harder one for women to change because often there is just daily stress that you're experiencing in your life, and so that can often hold women back even if they have recovered weight and are not exercising as much.

Danny Lennon: Yeah. I mean, that makes just a ton of sense that you can have two women that essentially have to, say, regain the same amount of weight and up their calories by the same amount in theory to be successful, but if one of them is sleeping eight to nine hours a night and has a low-stress job and doesn't have any really other lifestyle stressors compared to someone else who has maybe poor sleep, really stressful job and they've got kids at home and has all these other factors going on, it's obviously not equatable to compare those situations. So I think, yeah, just people being aware of those is important.

One thing you mentioned at the outset, Nicola, earlier on is a link with other types of disorders. So I think you mentioned PCOS, for example,

which is becoming really prevalent at the moment. And so is there some sort of correlation between how we can go about treating those issues? Because, I mean, typically we've talked about now increasing body weight or increasing calories, and so where does that tie in with something like PCOS? Because for a number of sufferers of PCOS there can be those that are overweight, so it's not really going to be a same treatment program presumably. But is that more a place of where you're talking about people who it's not overweight that has caused the PCOS or there's some other issue? Is that more comparable to what's going on with the amenorrhea, if that question makes sense?

Nicola Rinaldi: So I think that one thing that's important to point out is that PCOS and hypothalamic amenorrhea have a lot of symptoms in common. So the diagnosis of PCOS requires two out of three sort of categories of symptom. One is a missing period; two is ovaries that show a lot of, they're called cysts but they're really just small follicles that haven't developed yet; and three is hyperandrogenism, which is an excess of male hormones, and that can be exhibited either in blood work or in physical symptoms like excess hair and acne that's sort of not just on the face but all over the body. There are other things, and also insulin resistance. It's really important to get the correct diagnosis whether someone has PCOS, which can be lean PCOS, which is defined as when someone has a BMI under 25, or HA, because the treatments for them are essentially opposite.

So what I found is that many women that actually have hypothalamic amenorrhea are misdiagnosed as having PCOS and then they're put on metformin, which often decreases weight because it makes it a little bit harder to eat because it can cause some GI disturbances, and they're told to exercise more and eat less, which is the exact opposite what you want to do if you have hypothalamic amenorrhea. So I have a whole chapter in my book on this diagnosis and I actually have a post on my blog with a little info sheet to download that if people are interested they can find out a little bit more information about how to distinguish between the two. And I also do have a, in the chapter in my book, I have some ideas of sort of if you do have PCOS some things that you might look at as far as treatments go.

One that I find really intriguing is there was one study that was done that showed improvements in insulin resistance and hyperandrogenism when women ate most of their calories for breakfast and then had a smaller lunch and a very small dinner. So I think that's a really interesting thing to try because obviously it's totally natural—you're not taking any

medications—and certain the effects were similar to what was seen when women would take metformin. And there are some other drugs that are available now. Inositol is one of them. I've been speaking with an endocrinologist and she said that she's recommending that to her patients over metformin. So those are a couple of things that women with PCOS can look into. But certainly I'm not an endocrinologist and PCOS is a huge field, so if women are suffering from that and they have been accurately diagnosed, then I think it's important to—there's a lot of research out there and support—to find a practitioner who can really guide you down that path.

Danny Lennon: Yeah, for sure. Nicola, when you first started digging deep into the research in this area, was there anything that was particularly surprising that jumped out at you early on or is there something that you found that you think is often maybe missed in conversations on this topic?

Nicola Rinaldi: One thing I found really interesting was the effects on metabolism of under-eating and in combination with over-exercise. So there are a couple of papers, one by Rebecca Melanson and one by RJ Stubbs, I don't remember his first name, that showed that…in the Melanson paper she showed that the women over the course of a year as they were eating more, their metabolism, their resting metabolic rate, actually increased by 300 calories a day just through eating more because that then increased…it enables your systems to work properly and so they use more energy. And so that's kind of where the whole set point theory comes from, is that as you're at a negative energy balance, your metabolism is decreasing because your body is shutting down some of the nonessential functions, and then some of the more essential functions as you go into further negative energy balance. So that's one of the reasons as I'm sure your listeners know that as you go on a diet it becomes less and less effective over time. And then similarly, when you start re-feeding, you might gain weight at the beginning but as your metabolism increases back up and all your systems are fully fueled, you can continue to eat the same calories or the same amount and your weight will stay stable. So I thought that was really interesting.

In the Stubbs study, they had two groups where one was exercising and one was not, and then they gave everybody sort of an unlimited buffet that they could eat from but measured how much they ate. And the folks that were exercising ate more than the nonexercisers but not enough to actually compensate for the energy that they had burned, and in the course of just a week I think their metabolism slowed down by 100 calories per day. So

that's in the course of a week. It's kind of nuts to think that it can happen that quickly.

Danny Lennon: I think that's why I suppose when we talk about switching back to framing things where you're thinking about, “How can I fuel this activity appropriately?” and then we end up getting people that their energy expenditure jumps up to account for that, and people just realizing that, yeah, if you chronically under-eat, there's going to be some of those, not any metabolic adaptations downwards but then changes in NEAT levels and just energy expenditure through exercise output as well. That's really, really interesting. It's a fascinating area.

Nicola Rinaldi: It really is.

Danny Lennon: Nicola, before we get to the final question, can you maybe let people know where they can find more of your work online and maybe where they can get a hold of the book if anything so far has interested them?

Nicola Rinaldi: Sure. So my website is noperiodnowwhat.com and my blog posts are all on there as well as links to ebooks and to purchase the paperback, and the paperback is also available on Amazon. So again, the name of the book is “No Period. Now What?” And, yeah, I've got lots of stuff on my blog and if anybody has questions that they would like answered, I love doing the data analysis, I'd love to share more of my information with people, so I'm happy to take questions. There's a contact me form on my website, so I'd love that.

Danny Lennon: Great. Yeah, I will link up to all that stuff in the show notes for anyone listening, and so you can click through and access all that, and obviously I highly recommend you doing so. Nicola, that brings us to the final question that we always end the show on and this can be to do with anything even outside of today’s topic, and it's simply, if you could advise people to do one thing each day that would improve their life in some aspect, what would that one thing be?

Nicola Rinaldi: Oh, that's a good question. I think be kind to yourself. I find that one of the hardest parts for women in trying to recover from hypothalamic amenorrhea is to stop criticizing themselves and to stop thinking that they need to always push harder, push more, comparing themselves to others. I think we're often much kinder to our friends and family members than we are to ourselves. And so that's something that I've really learned through this process, is to stop criticizing myself when I look in the mirror and just be happy with who I am, be happy with the fact that I'm healthy and I can

be active and I've got this great work that I've done and that I'm enjoying sharing with everybody. And so I think that kindness to oneself is the biggest thing.

Danny Lennon: Yeah, absolutely love that, and I wish it was a message that was more prevalent at least this day and age and I think it's a really, really important message. Nicola, on that note I just want to say thank you so much for your time today, and even more so, thank you for the amazing information you've given people. I think it'll be really helpful to many listening, and thanks for doing the amazing work you're doing.

Nicola Rinaldi: Oh, thank you so much. I really appreciate your having me. This has been great.

Danny Lennon: My pleasure.

And that is our interview for this week. I hope you enjoyed the discussion as much as I did and took something really valuable from it. And remember, you can get the show notes at SigmaNutrition.com/episode135 where I'm going to link up to all those studies Nicola mentioned as well as where you can contact her or where you can read more of her work online, which I do really encourage.

If you are enjoying the podcast, then please help support it by sharing it around on social media as well as leaving a review on iTunes or even becoming an official patron of the show at Patreon.com/sigmanutrition. And even if you think any of those things are small, they make a huge difference and they've very much appreciated. So every single piece of support that I get for the show means a lot, so thank you for doing so, and those that do it every week, thank you so much.

For everyone that wants to keep up with the latest content that is being pushed out both from Sigma Nutrition but just from interesting places around the web related to evidence-based nutrition and performance, then I'd point you towards the Sigma Synopsis if you're not already on that email list. It's a short list of awesome content that I'm going to send you once per week, so every Friday you'll get one email and you can pick and choose from different pieces of content to read, watch or listen to. So there'll be a summary of that week's podcast, a recommended article from somewhere on the web that I recommend, the best video that I've found that week, and then often just a random resource recommendation that you can maybe use and then also a lesson to bear in mind for that week. And so again, a quick email to scan through and then pick out what you think

will be useful, just so you can keep up-to-date with stuff you may have missed from the evidence-based fitness scene. So, if you just go to SigmaNutrition.com and just scroll down to the bottom of the page, you should see a place there just to click on the Sigma Synopsis and join that for free. You won't get any other spam email or anything like that, just that one email per week with all that summarized for you.

That's pretty much it for this week. Thank you so much for listening in again to this interview, guys. I hope you're finding the podcast useful and beneficial. And I will talk to you in our next episode later on this week. Take care.