

Brian Grasso and Chris Mohr
Nutrition Q&A

Brian Grasso: Hey everybody, this is Brian Grasso – founder and CEO of the IYCA with another one of our audio bonuses for you individuals who have purchased and gotten involved with our Youth Nutrition Specialist Certification. One of a kind – just one of the most unique things on the market today, and it will absolutely differentiate you from all of your colleagues and competitors in the geographic areas in which you work. So, congratulations for making a very smart choice. And, as promised, Dr. Chris Mohr lit it up on the live teleseminar that we recorded as we were recording this right now, we recorded it just a couple of nights ago. He lit it up with amazing information, but here we are back as promised to answer the rest of the questions that – almost 300 questions that came in on the blog. Now, if that sounds a little daunting for you to listen to, don't worry too much. There are a lot of repeat questions, and we won't let this recording go for 90 minutes. If we get long, we're going to break it up and have a second recording for you. So, with that, Dr. Chris Mohr, thank you by the way for taking the time again to help us understand this very complex topic.

Dr. Chris Mohr: Anything for you and the IYCA – I'm happy to be here.

BG: Wow, thank you for that – I might hold you to that in time. "Anything for the IYCA..."

CM: Well, maybe not anything.

BG: [laughing] Well, let's start off the top – we started chatting, Chris, just before the recording started and we discussed that on the live teleseminar you made a great point about tournament nutrition and how if your games are very close, only within an hour or two apart, that a sports drink might be your best option from a re-hydration and certainly absorption and digestibility standpoint, because you don't want to be putting a lot of food into your belly when you have to compete again in only 60 or 90 minutes. But there are other case scenarios where you have games in the morning and games at night, and those require different or more unique strategies; so, if you could, let's start there. Let's talk about what happens on tournament weekends where your games are several hours apart.

CM: Ok, great, great question. This one always comes up. In the course, I actually have a done-for-you handout that you can give to your athletes talking about some specific strategies and ideas. But again, it's important to cover right here. So, a couple of hours between games or even more than 60 minutes – enough time that you could potentially get hungry. Think about especially when you're on the road, think about foods and snacks that are non-perishable – so don't need refrigeration, because you have to be practical here. One of my favorites – dried fruit and some raw nuts – quick, easy, I don't know a kid that doesn't like them unless they're allergic to nuts – obviously, that wouldn't be a good suggestion. But, something simple like that is quick and easy and very portable. Peanut butter and jelly or peanut butter and banana – great if you have more substantial time between your events – again that works well because it's going to help fill you up but doesn't need any refrigeration. Fruit always works well. I do know some parents who've if they're going to be out on the road, if it's an all-day thing, would actually bring a cooler, which I don't think is too much out of the question depending on where they're traveling to. If that's the case, something like yogurt could work – again going with the yogurt and nuts or fruit. But throughout the day you want to keep it pretty basic, so you're not having a substantial meal, but you're also at the same time keeping your stomach full but not over stuffed. So, full and also your muscles fueled properly. And again, you can kind of sip on a sports drink throughout if you're going to have that continuous play in maybe a morning and night game or whatever it might be.

BG: Love it, and you know it's funny you said that because I remember you telling me a story while you were either earning your undergrad or your PHD, when you used to cart a rather substantial cooler all over campus to satisfy your dietary needs while you were a competitive athlete. Was it your undergrad or your PHD?

CM: It was my PHD – actually I can't even take credit for being a competitive athlete, I was just hungry.

BG: Haha, I love it!

CM: Exactly, you're at the lab for up to 12 hours a day – got to bring that cooler, so I brought it in with me every single day.

BG: If you can do it, it's possible. There you are. There's the endorsement. Alright, we have a great question about female runners in particular. This one post is concerned that an overindulgence from a coach offering advice to female runners in particular – he's a little concerned about the potential for that to cause emotionality, anorexia, bulimia, not so much cause anorexia and bulimia, but certainly if the runners are anorexic or bulimic or just very emotional about the topic in general – he's worried that bringing up the topic, although runners and nutrition often do not go hand in hand particularly well. That's something I've noticed in my career as well. So, he's asking, how do we broach that topic? How do we talk to female distance runners about the topic of nutrition being emotionally sensitive to the potential concerns?

CM: This topic can go on forever, and I'll be honest, this is – looking at eating disorder realm of things is way outside of my area of expertise, but when I was a sports nutritionist at the University of Massachusetts and worked with other athletes along the way, it's definitely a delicate issue. You want to be very careful about the words you choose when talking to definitely female athletes, but also just younger athletes in general because of the sensitivity and the emotions that are involved with younger athletes. Avoid the words, and it sounds silly to even have to say this but I've heard it way too often, but avoid the words "fat" or any potentially degrading terms that people may use for people who may be a little bit overweight. I think it's a wise idea to speak with the coach and make sure that you're on the same page in terms of how you're addressing the athletes. And to be honest, I think it's a great idea especially with that age group to get a qualified sports dietician onboard as well, so you're all on the same page. Because everyone's going to have unique areas of expertise – like I said, eating disorders are way outside of my area of expertise. And I refer out for that, because I don't feel comfortable enough with my knowledge to work in that situation. But it is an important topic, of course, but I think it's such a delicate one you really have to get a great background and solid information – again work with the coach, the parents, and everyone make sure you're on board, again not crossing over those sensitive topics or terms but also not pushing it under the rug and pretending there may not be an issue.

BG: Right. That's a great answer. I think common sense bordering on the side of caution might be a great way to summarize that. And I agree with everything you said. Chris, this next question is one that I can relate to very well, especially in the summer times. I mean, I used to have to get up at 3:45 in the morning to get to early morning football practices, because the contact hours that high school coaches are allowed to have with their high school athletes in the summer is very limited, and so very often during two day season or even one a day season in the summers, practice is early. We got started at 5:30 in the morning, so young athletes – teenagers in particular – tend to skip breakfast on a semi-regular basis. Now, if I had to get up at 3:45 to get there at 5:30, you can pretty much bet these kids are

getting up at 4:45/5:00 and just making it there on time. How do we talk to young athletes in this kind of situation to encourage them to take 5 minutes and have some breakfast? How do we teach them or talk to them about that, and what can we tell them to eat in those 5 minutes as they're stumbling out the door to get to practice?

CM: Alright, this topic is always going to come up, and we see it with young athletes. We see it with women in our bootcamp. Like you said, most kids in general, let alone those waking up for a 5:30 practice aren't eating breakfast. So, when you look at the data, it's anywhere from about 30ish percent of adolescents aren't eating breakfast at all. So, you're waking up – let's say you have that early morning practice – you need to get something in your body, we know this, it's absolutely the most important meal. When you're talking to young athletes, you need to talk their language. So, talk – you know, whatever sport they're playing, teach them how putting something in your body will make them better, will make them stronger, will make them think more clearly, and allow them to give that a try and see the results for themselves. But give them those simple ideas – they're not going to wake up 3 hours before a practice at like 2:30 in the morning to have a substantial meal. So, here Johnny Doe is a great list of 5 ideas – give these a try – yogurt, or a piece of fruit, or just like a granola bar – something really basic – you don't have to sit down, it take 3 minutes to eat, but you're getting something in your body. Because if you're not, we all know the results of trying to perform without any fuel in your body. The other thing that I love pre and post workout is chocolate milk. So again, it's some calories, some carbs, a little bit of protein, and unless you're lactose intolerant most kids like chocolate milk.

BG: Yeah, most Brian Grasso's like chocolate milk as well.

CM: Yeah, I'm with you.

BG: That's some good stuff, and I like that. Would your idea of dried fruit and nuts be a good option? Just put it in a little baggie and take it with you?

CM: Yes, more in this case more fruit than nuts, because nuts are going to sit in your body – they're going to take longer to digest because they're higher in fat and protein, so I'd be cautious with that and then eating those and running out the door, and thirty minutes later trying to run or whatever it may be.

BG: Right, gotcha. That makes a lot of sense. Alright, Chris, any thoughts on vegan diets for young athletes? Are they too restrictive or done in proper accordance are they healthy for young athletes? Again, athletes being the operative concern there.

CM: Here you have to just be careful – vegan diets, vegetarian diets can be very, very healthy if you're smart about it. And when I say you in this case, you have to really educate the parents on what is smart. And I'd assume not all the time, but a lot of the time, in the cases I've seen, if a child is a vegetarian most likely or at least often their parents are as well. I mean, sometimes as they get older they may make that decision themselves, but a lot of the kids that I've seen who are vegetarians – their parents are, so they're kind of following that lifestyle with them. So, the thing to be cautious of again it can be very healthy, but being a vegetarian can mean you're eating pizza and fries. I guess that's not vegan necessarily, but you just have to be very, very conscious of getting a variety of high quality proteins and lots of different vitamins and minerals through the foods that you eat. So, I'm okay with that, again you have to be so cautious – this is something too that you as the coach or you as the trainer need to be very educated on what makes up a healthy, smart, balanced diet. And this is again something that may be a good idea to collaborate with someone who's worked in that arena specifically.

BG: That makes a lot of sense. I agree – vegan diets could mean a lot of “crap in” in terms of food - makes a lot of sense. I think I know where you’re going to go with this one, because we’ve had a conversation on this before. Protein powders – back to that particular topic – this qualified question is neat: with or without artificial sweeteners? Specifically for kids under the age of 10, but I’ll ask you to talk about people 6-19.

CM: Okay. On occasion I’m fine with it as long as it’s not making up the majority of their diet. Even on a daily basis I don’t think you need a protein powder. But, for convenience, no problem – let’s say you take a whey protein supplement, well you get whey protein in some of the foods you eat as well. And all whey protein is essentially it’s a dry – it comes from dairy, and they dry the milk and separate out the whey protein and Kacine which is the other component. So, you get that when you drink milk for example, you just get a more concentrated source of it if you’re eating the whey protein. So, the thing is again, I don’t want people to think that they need this to perform, but I am very okay and very comfortable with something like that once in a while – it’s a much better option than fast food or quick, out the door breakfast if you don’t wake up early enough or don’t have time for something else – a little whey protein with a fruit would be a good option as well.

BG: Gotcha. Okay. Some of these questions are – these are all fantastic. Here’s a great one: pubescent and post-pubescent boys in particular have naturally increased testosterone levels. The question here is, is protein synthesis (i.e. breakdown absorption) affected by increased testosterone, and if so does that infer or imply that young athletes in this pre- and post-pubescent timeframe, should they be consuming more protein because of that testosterone level concern?

CM: Wow.

BG: I know, right? Great question! Do you know the answer?

CM: Give me 10 minutes and I’ll look that up real quick (haha!). No, that’s a great question. Some protein synthesis – this person defined kind of the breakdown and build up essentially of protein in the body – it can be affected by hormone levels, and really I think we’re getting a little bit too complicated for what the athletes need to know. Or even for what the coach/the trainer needs to know. Kids do need more protein in general, because of their growth – they’re growing even independent of being an athlete they need more protein for their growth – the massive growth that they’re going through and growth spurts. As an athlete then above and beyond that, you do need even more protein, but like I said earlier, that could definitely be easily consumed through the diet. In terms of the testosterone, I wouldn’t get too caught up in the hormones and the testosterone levels – just know that young athletes do need more protein, moreso than in regular kids who already need above and beyond just even adults.

BG: Sure. I like what you said there by the way. I’m not going to abstain from these questions, but I’m going to try and make sure we focus on the simplicity that is the advice of Dr. Chris Mohr, because some of these are very complex, and I think that’s actually Chris if I’m not mistaken one of your points, which is that we’re looking far too deep for what could be relatively insignificant, minor concerns rather than looking at the macro issue of nutrition. Not that the question was by any way insignificant, but I think we don’t have a handle on the fundamentals. Let’s do that first – am I misspeaking when I say that?

CM: No, 100% correct – absolutely.

BG: Okay. Excellent. Great question here – it comes in from Liz Donnelly, fantastic IYCA member who I know personally as well. She was – someone quoted her and said that children require more dietary fat than adults due to developmental reasons. And Liz was unsure of that as a truism or if that's false. So, if you could answer that for us.

CM: Okay. What the person was probably speaking of, and I obviously don't know exactly what they were saying – kids have a high requirement for essential fatty acids – for omega 3's in particular. So, dietary fat as a whole – you need to get quality fat because as you alluded to in your question, in terms of development, particularly brain development, those omega 3's are very important. So, that's likely what they were kind of saying, more specific than just the dietary fat as a whole. But kids don't need more dietary fat than adults – they definitely need a high quality source of fat, including omega 3's, which come from fish, come from nuts, from flax seed, from a variety of sources in that way.

BG: Makes a lot of sense. Okay, I thought brain development and brain synthesis was part of the equation there. Here's another great question: if we have a life-threatening milk allergy, not sensitivity, an absolute life-threatening milk allergy, and all dairy and derivatives of dairy need to be removed from the diet altogether, this question is concerning protein supplementation – if it's necessary or how do we get enough protein and calcium in the diet?

CM: If you're not consuming milk?

BG: Correct, or any derivatives of dairy.

CM: Okay, so I'll first say I don't agree that people shouldn't take in dairy, and I think that's one of those controversial topics that people say – if someone's lactose intolerant then yes, you're not going to be drinking milk. But I don't agree with the camp who says that we shouldn't eat or drink dairy because we're the only – I've heard a lot – we're the only mammals who drink cow's milk as adults. Well, I've actually seen my cat drink it, and I think if they had opposable thumbs and could open up the container they'd drink it too.

BG: Probably.

CM: You can get adequate sources of calcium if you're not drinking milk – you can still do it. Lots of vegetables have calcium for example.

BG: Broccoli in particular, no?

CM: Broccoli is great – absolutely, swiss chard is a good source of calcium. So, no dairy products at all, I'm trying to think about what else there is. Think about a vegan – you can absolutely get adequate sources of calcium. Some other foods have it as well. Milk is definitely an easy way to get that, but if you're not drinking any dairy, if you go to soy milk – soy milk is now fortified. Almond milk is fortified. So, there's definitely other options for protein, for calcium. But, if it also comes down to "I don't think adults should drink dairy at all", I personally don't agree with that from the research I've seen.

BG: Okay. And that is truly, I mean, even if it's been quantified as a "life threatening allergy"?

CM: If it is a life threatening allergy or lactose intolerant, then I don't think they should start drinking dairy. I kind of brought that up because I have been hearing that a lot more – that adults shouldn't drink cow's milk, and people have talked about mucus build-up...

BG: I've read that, yes.

CM: It hasn't been proven in the research. If it's of course an allergy, then 100% stay away from dairy.

BG: Gotcha. Okay, well we answered that in two different ways, so perfect. Interesting question: is there a gender difference in nutritional requirements for young female athletes and young male athletes?

CM: A little bit in terms of some of the nutrients – things like Calcium – but I don't know the exact recommendations off the top of my head. But, Calcium is always going to be a higher concern for females. Iron as well – are two minerals that come to mind. But, to be honest, not a huge difference, so the same variety and quality of nutrients needs to be consumed by both genders. And then of course being more cautious, especially as young women start to menstruate, they're going to be losing iron each month in their blood, so that's why it's a higher concern for women. But, other than that, the general rules of thumb apply for both genders.

BG: Gotcha, and that to me would qualify as a macro look rather than the finites. But I love the answer. Interesting questions: paleo style of eating, which I think is traditionally lower carbohydrate, higher fats – meats, vegetables, nuts, that kind of thing – this question is, are there possible pros or cons of that kind of eating with children in particular? Again, this might be just a macro look as opposed to a micro look, but I'd be interested in what you'd have to say about that.

CM: Um, I'm okay with some of it, and I just saw a researcher that commented on the paleo diet this morning actually.

BG: Good timing, huh?

CM: I know, right? Basically for those who are not familiar, it's kind of going back to the Paleolithic roots, so getting away from the refined foods we have now, going back to the nuts, fruits, basic grains, things like that. So, I like it as a whole – I like a lot of the principles of it. It definitely is much lower in carbohydrates than a lot of kids, especially endurance athletes may need. But as a whole, I like some of the principles – the raw nuts, the fruits, the basic foods are part of that diet so to speak and would be healthy for kids or adults.

BG: That makes a lot of sense to me, because like you said – fruits, vegetables, nuts, meats, are all kind of represented in that "style" of eating.

CM: Exactly, so the less processing the better.

BG: Well, speaking of processing, this question I'm going to kind of refurbish a little bit – the question is based on organic food, and essentially this person is talking about how they're expensive, and are there organic low-cost alternatives. Let me rephrase that just a little bit – I'm not trying to change the question of this particular coach, and I apologize if it comes off that way, but let me ask your thoughts on organics. Organic fruits, vegetables, and meats – worthwhile, necessary, etc.?

CM: I just yesterday or two days ago wrote a blog post about this topic. The timing is just perfect. In terms of organic – most important is number one that you're eating fruits and vegetables, which is a problem for a lot of people. So, they say on average adults, and I don't know the statistics on kids but it's probably similar, on average adults are taking in 2 servings of fruits and vegetables every single day. The recommendation is anywhere from 5 to 13. So, we're not even getting half of what we need on a daily basis. Like I said, that number is for adults – I venture to guess it's the same or very similar for kids. So, my first priority above and beyond organic is just eat more fruits and vegetables, ok? Number two – there are certain fruits and vegetables, and we could even include this as a bonus, but there's a list of something called from the environmental working group that has listed out 47 different fruits and vegetables in order of the most pesticides down to the least pesticides. So, if you're going to buy organic, they say the top – they call it the “dirty dozen” – these first 12 have the most pesticides on them in terms of the growing and things like that, so those are the ones you want to focus on for organic. As an easy rule of thumb, think about fruits and vegetables where you'd eat the flesh, so a peach for example or berries – where they have soft skin that you'd eat – those are going to contain most of the pesticides in terms of preservation and the farmers growing them – they'd need more of that when you're looking at conventional types of farming. So, to kind of answer that question – there are some data that some organic foods do have higher levels of nutrients, but again, I don't want someone to say I'm only eating 1 or 2 servings a day of organic food because I can't afford more than that. There's a lot more benefits to eating conventional fruits and vegetables than eating none at all because it's not organic. Is that clear?

BG: 100%, absolutely – especially the “dirty dozen” – that's fantastic advice right there. Chris, speaking of you said 5-13 servings of vegetables a day for an adult, is that right?

CM: Fruits and vegetables, yes.

BG: How many servings are in a bag of broccoli? Like a bag of broccoli florets?

CM: It's about a cup of fresh or about a half a cup of cooked is one serving. So, do you eat a bag at a time?

BG: I eat 2 bags a day. I'm all over broccoli man. Is that a lot? That's fantastic?

CM: That's a great quantity of broccoli. They were actually out of it at my store, I think that's why.

BG: I can ship you some – I've got some reserve! I was just asking out of curiosity there. Let me interrupt this for just a second, Chris and say – if you're listening along and you didn't hear me say specifically word for word what your question was, I'm going down the blog – I'm not just reading any questions, but if I didn't get to yours it's because it really has been covered in the teleseminar or the other audios. Maybe not verbatim word for word the way you asked it, but the general principles of what your question is have been answered very thoroughly by Chris already in either the teleseminar or in the other free audios we're giving away. So, if you don't hear me ask your question verbatim, again, I just want to remind you – I'm not ignoring it, I just know we've already touched on it, so I don't want to waist too much time here asking Chris to repeat himself a number of times. So, here's an interesting one – this is let's just say Chris that the macro look of nutrition is covered – this young athlete eats it the way Dr. Chris Mohr says he or she should. This question says they're probably still going to have a little bit of junk food here and there – processed or fast food – and they want to

know if cinnamon could be a good natural supplement to help control blood sugar? I never even heard of that before – I'm wondering if you have?

CM: Yes, cinnamon is actually – the last couple of years it's kind of emerged as one of those super spices so to speak. There's been some data to suggest that it may actually benefit those with diabetes by lowering blood sugar. You know, I totally understand kids are going to eat some junk food, and I'm not against that at all – balance is the key. And if they like cinnamon and want to add it – fantastic, it has some great anti-oxidants. I wouldn't necessarily think that if someone eats a bag of Doritos you immediately have to run over to get a teaspoon of cinnamon to help control the blood sugar. Our bodies actually do that really well, so yes, some foods are better than others, but if you don't have diabetes your body will control blood sugar very well and kind of keep it in that normal range. So, if they like cinnamon great – I don't think you necessarily have to add it to the diet for the purpose of lowering blood sugar.

BG: Gotcha. If you had said otherwise, I was going to start having a bag of broccoli with cinnamon. That was in my head where I was going.

CM: That may be a great idea actually – give that a whirl and let me know the results!

BG: Never can tell. Actually, you're catching up to me quickly here, Chris. I'm going down the blog here and trying to find questions that are not ones we've covered. Here's an interesting one: post-workout or post-training or post-competition carbohydrate/protein ratios. The question doesn't suggest whether that's going to mean a supplement or in food form.

CM: Nutrient timing is a hot issue especially among sports nutrition researchers right now. So, typically the ratio that's been shown, especially for endurance-based sports is about a 4 to 1 ratio. In other words, for every 4 grams of carbohydrate, approximately 1 gram of protein. Now, there have been some data – so with that said, there have also been data to suggest that 3 to 1 works, and also 2 to 1 works. So, typically as a general answer, anywhere from 2 to 4 grams of carbohydrate for every 1 gram of protein seems to be of benefit. The more endurance-based the activity, the higher the carbohydrates, so more to that 4 to 1 ratio versus the 2 to 1. Again, one of my favorite ways to – instead of your mixing up some kind of special drink for athletes or whatever, is the chocolate milk. That works really well. If you do – an athlete does insist on taking a protein supplement, this is a good time to use a sports drink like Gatorade with a scoop of protein powder – that'd work well also.

BG: Sure, that makes sense. Question about – we talked about in between competitions or events or games on tournament day – question relating to pre-game as opposed to in between games. I liked your answer regarding a quick chocolate milk if you're running out the door at 5 o'clock in the morning. Could that be broadened or changed if we're looking specifically at a "pre-game meal".

CM: Ok, with this answer I'll say that assuming we're not talking about the 5:30am thing, like it's something later in the afternoon so someone can have some type of substantial meal. The basic here would be primarily carbs and a little bit of protein. I described that plate the other day on the teleseminar – so think about if you want to break up that plate – a majority of your intake would be carbohydrate based (about $\frac{3}{4}$ total to $\frac{1}{4}$ of protein). So, think about some options, because when you talk to kids I can't stress enough you're not going to say eat $\frac{3}{4}$ carbs, $\frac{1}{4}$ protein, you're going to say "eat food" and here are some food options.

BG: Gotcha.

CM: So, we think in food, we don't think in nutrients, so a wrap with tortilla, some turkey breast or rotisserie chicken and some veggies. A turkey sandwich, a bowl of cereal with some skim milk and some fruit; if you have enough time before your event some pasta with a little chicken on top or tuna fish – anything like that would work. Again, talk foods, don't talk specific nutrients to the athletes. But, that's kind of the general rule of thumb you want to think about when thinking of examples – primarily carbs, little bit of protein.

BG: Love it. I'm going to see how much of a revolutionary you feel like being today, Chris. The United States Department of Agriculture food pyramid – assess for quality.

CM: The newer version that came out in 2005 is better than the previous version. I would like to see more emphasis on quality of nutrients versus just the general categories (carbs, fats, protein, dairy, etc.), because there's so much more to a whole umbrella term of for example carbohydrate. And I know they have specifics in there for what percentage they say should come from refined – I think it's – I'm blanking on it, I'm sorry. But, I want to focus on quality more than anything – more than just quantity. So, they're getting better with it. I think there are better pyramids out there – I like the Mediterranean pyramid a little better than the US pyramid.

BG: I do as well.

CM: And again, we just need to look at food quality more than just the quantity. And obviously there's limitation when they're putting these pyramids together. When all of the scientists get together there's a lot of consensus that's to come, but if you want to use a pyramid as an example, I'd prefer the Mediterranean food diet.

BG: That's a good answer. Chris, I want to say this cynically, because I believe I am very cynical towards it – the advent of ADHD in our contemporary society as a diagnosis pertaining to kids often has kids being medicated. Could nutritional intervention (i.e. simply a higher quality diet) help in the “symptoms” of children who are affected by ADHD?

CM: There's actually some great data with that, and specifically with essential fatty acids looking at ADHD. So, I know a lot of people turn to sugar as the culprit, and I haven't seen specific data suggesting that sugar intake is linked to ADHD or ADD. I have seen supportive data that those with ADD or ADHD actually may be deficient in omega 3 fats. So, like you, I don't remember this when we were younger, I don't remember this huge amount of people having this, or whether people were just maybe distracted once in a while. I'm not saying that kids don't – this is a totally made up disease, but I think that a lot of times people jump to the conclusion that if your kid's a little distracted in school or whatever they immediately have to be medicated. I do know that nutrition as a whole can play a huge role in behavior, and there are so many factors that play a role in the general health of a child – mental and physical.

BG: So, nutrition can be an intervention of perhaps some success as a part of a more holistic potential change?

CM: I think so, yes.

BG: Ok, gotcha. Soy milk: soy products in general – this question is in accordance with the idea that allegedly if young men consume soy milk or soy products the potential concern is feminization of those young men. Does that mean young men specifically should stay away from soy products, or are we looking at a lot of hyperbole and inflation?

CM: What I've seen is there's been some more speculation than anything. And I was talking to someone recently – I haven't been able to verify this, but I guess there are some individuals, some physicians who are kind of talking about this idea of brought on feminization of males with soy consumption. You know, I don't know to be honest, I haven't seen enough data to support that. My general thought on soy is as a component of a healthy diet, some natural soy, and when I say natural – just like any food, not a ton of processed soy ingredients – not a ton of processed any ingredients. So, a little bit of soy milk I have no problem with. A little bit of tofu, or things that are less processed – soy beans, I'm fine with. But lots and lots of foods have soy fillers and soy ingredients – a lot of the “energy bars” out there have lots of soy proteins in the ingredients. Too much of something like that I wouldn't want. Again, not necessarily for the lowering testosterone and things like that. But, just in general I'm not a big fan of processed ingredients.

BG: Ok, let me say thing – I've been in Chris's position more times than I can remember, which is you put yourself out there and you make statements and try to educate in every way you possibly can. 10 years of schooling means Chris Mohr knows more than I do – pure and simple. But every once in a while, perhaps more often than we all like, when we are trying our best to create an educational product or program to educate the masses, we get – I don't know if this is the right terminology, but we get quoted far too finitely. Meaning, I might have 7 pages or 2 hours worth of things to say about a topic, but I'm restricted to saying what I can say in the small amount of time or the small amount of space in a textbook I'm able to say about it. So, I say that because I know we touched on Gatorade and Powerade on the teleseminar, and you've made your statements on that, but it's a reoccurring theme on the blog – the most, beyond Creatine and protein – that is the most asked question, so I want you to have a chance to expand your answer just a little bit more. People have a way of hearing what they want to hear sometimes moreso than being able to look into your broad knowledge of the subject. The question that keeps coming up is high fructose corn syrup, dyes, food coloring, and an imbalance of Sodium Potassium in those sports drinks. So, you've made your statements and I agree with you that it's a necessity sometimes, they're easily digestible, readily available to run to the gas station and get one on busy tournament days – so they could and do have a place, but why don't you spend a bit more time at length addressing high fructose corn syrup, etc, and their inclusion as ingredients on those labels, and maybe provide a bit of a stronger answer so folks don't think they heard what you said for three minutes on a teleseminar and therefore you're a fan of these unconditionally.

CM: Alright, so sports drinks in general – there definitely are some better ones out there. What I said initially, which I still stand by, is they have their place in an athlete's diet, and when I say an athlete typically the recommendation is exercising over 60 minutes of continuous activity. A 5 year old learning how to play soccer, standing around most of the time, does not necessarily have to be drinking Gatorade. But someone who is more active and more intense, then sports drinks play a good role, and there's lots and lots of supportive date. Now, what you brought up with the high fructose corn syrup thing is a really interesting topic, because that's definitely come into light in the last few years. And for those folks that have heard of it, really it was initially kind of called to the table for causing the obesity epidemic. So, if you look at high fructose corn syrup and its invention in the last 40 or so years since it's really been popularized or used more readily, the obesity epidemic has grown up a similar path – if you look at the two graphs side by side. So, some researchers thought, wait a second, there's something

going on here, there's a correlation between these two. And when you look at the data, it does look like a correlation, but think about the foods or the products that high fructose corn syrup is prevalent in – soft drinks, yes sports drinks, and lots of others, but I turn to those a lot because they're in such high quantities particularly in soft drinks and a lot of fruit juices and slurpees and things like that which kids drink a lot of. So, if you were to do a research study and look at these side by side- high fructose corn syrup verses organic turbinado sugar for example, calorie for calorie I don't think there would be a difference at the end of the day if people were consuming them in equal amounts. Now, I do know there is some concern with how the high fructose corn syrup is metabolized and things like that. To be honest, I know a lot of the powdered drinks don't actually have it in there, so if it is a concern for example I know this and am not a spokesperson for Gatorade or anything, but I know that their powdered product does not have high fructose corn syrup – they use another form of sugar in there. But when you look at the date, there doesn't seem to be really against high fructose corn syrup as a whole. I'm not saying it's a great ingredient – I don't think it's good; I don't think sugar is good. But when you compare them side by side at the end of the day, I don't think there would be a huge difference in terms of the outcome for the athlete.

BG: Gotcha. Okay, that certainly quantifies a broader range of your answer than just the 3 minutes I gave you a couple of nights ago.

Role of hydration and/or food in injury recovery?

CM: Hmm, great question. Food, nutrition plays a huge role in injury prevention and injury recovery. So, just like you can't function optimally without the right nutrients in your body, and when I say nutrients that's obviously a very broad term, but a variety of vitamins, minerals, anti-oxidants, protein, so on and so forth. So, I think it's particularly important to be well fueled using a lot of the dietary practices we talked about and very simple nutrition principles. Making sure there's a wide variety of ingredients and of different foods to help prevent or reduce the risk of injury. Of course, injury can't really throw a curve if you're running on a field and you twist your knee or something like that, but the more prepared your body is and well fueled your body is, the less likely you are to injure yourself. Even from a perspective of let's say you're out there without having eaten breakfast in the morning – so you're not functioning at your peak, you're fatigued mentally, physically – that's also when the risk of injury is going to go up, because you're going to be a little more sloppy with your play. So that's another reason to keep your body well fueled and also well hydrated. And I talk about this and I have it in the course – I actually have a chart to match up to your urine color to look at are you hydrated or not. But that in and of itself takes a very small percentage of a loss of body weight to start to negatively affect physical and mental performance. So, again, think about you're on the field, you're dehydrated, you're not well fueled, your play is sloppy very easily or it wouldn't be surprising if the injuries are higher during that time.

BG: Makes a lot of sense. Chris, we touched on this in the teleseminar, but I'm looping a lot of things here – this question is being asked specifically more than once on the blog, but so many questions are pertaining to stuff like this: young athletes have a higher food intake or higher percentage of carbohydrates more likely than anything else, just by the natural "north American" style of eating – carbohydrates are very lofty. So, should I supplement with protein and fat because of that? I'm looping questions like that, which are inordinately represented on the blog. I'm looping that in with this, because I think it speaks to the same thing: how do we honestly get parents on board to start making the changes necessary in their family's nutritional habits, so that young athletes – the message we're trying to give them is not falling on deaf ears? They may want to make the change, but they don't hold the purse strings in their families to buy the groceries. And I know we touched on the topic of parent involvement, but so many questions are in my opinion great questions, and I'm not at all trying to

suggest they're not, but it's putting a band aid over a gaping wound to say the standard teenager diet in North America is predominantly carbohydrates just based on the stuff we eat, so should we then supplement with more protein and fat – no. The answer to me is no – change your diet! There's your answer. It's not a supplement question. It's a lifestyle question. But then if I was on the receiving end of the answer, as a coach or a trainer, I'd say ok how do I do that, because mom and dad then have to be involved in this process? So, walk us through some of the strategies you've used successfully to make parents understand what changes are needed and help them make the changes family-wide.

CM: Okay, and I love what you said about putting a band aid on a gaping hole. So, it's not as simple as add more protein to an already crappy diet. Number one – it's so important especially with young athletes – like you mentioned, they're not the ones doing the cooking, doing the shopping or anything else – footing the bill for any of this. So it's so important to also educate the parents. And what I've found to be successful is talking to the kids of course when you're doing your coaching, you're doing your training – using that time to educate kids as well very minimally, keeping it basic. But then also, so they're on their own independent of their parents. But then also talk to their parents when the child is there, so they're together at that point. And then in an ideal world also talk to their parents by themselves, and that may be asking too much for a lot of people, but you need to make change from all fronts. Educating the kid, so hopefully they have some basic idea of what's a better or worse choice, but then again getting to the parents. And if they're with their child or when they're with their child, you can then read some of the body language and see what maybe is appropriate or is something that they could actually do together as a family. And I think that's what's so important is encouraging all of this to happen together as a family. Because if it's a child saying to a parent “my coach Jon said that I need to eat X, Y, Z” – well, that's not going to get very far.

BG: Right.

CM: And vice versa – if it's a parent saying to the kid “your coach Jon told me you have to eat X, Y, Z” – it's not going to get very far. But if everyone's on the same page, and also think about when I say being on the same page, also meeting in the middle with them. So, I think it's so important to talk about or think about how small changes can make big results.

BG: Gotcha. Love it.

CM: People eat crap most of the time – most Americans eat a lot of junk. Just to give you an example, I was at the doctor's office this morning getting some basic bloodwork done, annual physical, as I was checking out, the woman checking out had a huge – like probably one of the 60 ounce slurpees from Triple K with a bag of orange peanut butter crackers.

BG: Wow.

CM: And that's not an atypical lunch for most people. So, for someone like that, you're not going to say – oh, that's great that you're eating this, but instead let's eat grilled chicken and steamed vegetables tomorrow. You know, where can we meet in the middle? Even still have your slurpee but instead of those orange crackers have a piece of fruit. Something like that – and then those small changes over time will make a huge result, and people aren't going to revolt to what you're recommending to them because it's so drastic.

BG: I agree, that was great. And let me add a couple of things there. I've been very, very forward and not shy at all over the last couple of weeks telling everyone who would listen that nutrition and my lack of education and understanding of nutrition was my single greatest handicap as a coaching professional for so many years. And I saw first hand what changes, even slight modifications in daily dietary habit, could mean to the performance of my young athletes. It's just profound. So, how did I get parents on board once I kind of woke up a little bit and realized that me learning the newest and latest speed techniques probably wasn't going to help near as much as me helping my young athletes and their families understand nutritional daily habits better was I started having a formal, once a month parent night. And we had 200 plus young athletes – this was not a small place or a small facility, and we invited them all. We'd have 75-80% or so ratio of parents show up, and that's a lot, and we'd talk every time – I mean sometimes it'd be injury prevention, sometimes about speed technique and development, but every single time we always addressed nutrition. Because we knew that was the one fundamental that everyone needed to hear more often than not. So, although there were themed nights, nutrition was present at all of them, and they were simple quick reference points that addressed how families had to be the initiative force. It had to be a top-down approach within families, because nutrition habits in general are learned behaviors. And if mom and dad are having 60 ounce slurpees and peanut butter crackers for lunch, we can't expect young athletes to do a whole lot different over time. So, that's one of the ways I found was successful, was getting parents into my facility with the young athletes and talking to them all on mass. And I saw great habit changes happen because of that initiative. And the other thing, Chris, I was just going to say briefly was – assess what the motivation of the family is, truly. I say this as one example, but some of you coach incredibly gifted, very highly notable high school athletes who are likely entertaining scholarship offers, etc. Nutrition is such a huge part of the athletic performance spectrum, and again my eyes have woken up over the last couple of years, perhaps the biggest part – how badly do you want to trade a hundred thousand dollars? That would be the question I would want to post to moms and dads, because athletic scholarships can be worth that much money. So, if you can make small modifications, daily habit changes, and help your daughter or son in their ambitions to obtain an athletic scholarship, why wouldn't you want to do that? So, the argument can come from a lot of different ways, but I would say assess the people in question and understand what their motivations are. Chris, would you agree with that?

CM: Oh yeah, 100%. I love your idea of bringing the family together that one night a week and then using that as a time to educate everybody. But, again, kind of having a fun night but educating as well. And yeah, at the end of the day, this could mean a lot for the kid and the parent. So, we've said all along that nutrition is more important than any of these, not discounting the importance of just training in general and speed training and everything else. But, if you're doing all of those even to the best of your ability but then you're loading yourself up with junk, you're not going to get the results you want. So, one quick thing I've also done very successfully is taken families as a whole to the grocery store, because then you allow the child to have some input themselves, so they feel like they're not being told what to do, but then also educating the parents as well, since they're footing the bill and the ones going to the store.

BG: Well said. I think that's a great answer as well. Chris, this has come up a lot on the blog as a matter of fact – stomach and particularly hip fat in young female athletes – I used to get this question a lot from my young female athletes, and a lot of our coaches on the blog are also getting the question. How do you address that answer? I mean, considering the emotionality and other things as well – I mean, I am sure your answer is we're going to go back to the standard formula that is quality nutrition. But, I want to sort of reemphasize it one last time, and you've already cited you're not an eating disorder specialist

whatsoever, but what kind of language could you use with female athletes who are kind of coming at you from that direction almost all of the time?

CM: I think what's important with this is just putting it in the perspective of not talking about their bodies but talking more about if – assuming they're athletes – putting it in the talk of performance. Now, with that said, that may not get across to some people, like some people I always say "talk their language". One young female may be very interested in performing to the best of her ability where another is just in it to do something and is more interested in aesthetics. But I think it's such a delicate topic that you do have to – I don't want to say don't touch on it, but you have to dance around it lightly because of the particular issues. So, I think you're never phrasing it in terms of your body, but how are you performing better physically, mentally, things like that, by making these small changes. And then over time, when he or she sees in your case that question was for she – the female sees those results, then they're going to understand or hopefully put that connection together that positive changes in their diet help them become more physically fit and aesthetically they felt better about themselves as well.

BG: Excellent. Switching gears almost entirely, Chris – natural vitamin C verses synthetic vitamin C – is there a difference and if so what, and what should we be looking for?

CM: In terms of supplements?

BG: Well, yeah let's start there – I think and by now everyone should know your answer – it's best to come from food. But if we are going to supplement, is there a difference in more natural or synthetic sources in terms of absorption or anything like that?

CM: Not in terms of the research I've seen. I've had this question before with the whole foods-based supplements – are they better than synthetic. Theoretically it seems to make perfect sense to me that yes, vitamin C if you're talking about a supplement – from a dehydrated orange it seems to be more user friendly or useable by your body than synthetically created vitamin C. I haven't seen data to support that, so I can't speak to that it would be better or not. But you mentioned my real answer is eating the orange is going to give you a lot more than just vitamin C in this case, so that's always the best route. But I haven't seen data to support natural verses synthetic. Theoretically yes, that makes sense, but my statement can't be backed by science. So, with that said, I can't really stand by that.

BG: Gotcha. That's I mean we're asking to quote data on the spot – that's a pretty tall order. Nutritional issue or observation – how do we best equip kids, young athletes, who have diabetes to make sure they're taking care of themselves? Or are there specific considerations or concerns with diabetic children who are also very athletic need to be cognizant of, or their parents specifically?

CM: This is something I'd say absolutely partner with a qualified someone who works in that area with diabetes. Especially if someone is type 1 diabetes – they're on different medications. If you're not up on that, and I myself am not. I worked at a diabetes center for kids for years, but it's been 6 or 7 years now, so I'm not up on the latest research. I would want to just like the eating disorder question, I'd want to partner with someone who has an area of expertise and then we could work together. The main concern is making sure they always have, and I would even say you always have in your facility or with you, some easy form of quick carbohydrates just in case there's that need. And I say that – lifesavers or anything along those lines, if someone had a blood sugar drop. But definitely talk to their physician, their parents,

a dietician who understands the medications and what's going on in their body. So you can all kind of partner together and work together to see what the best approach is.

BG: Absolutely love it. Honey was always one that I've had many friends in my teenage years as a matter of fact who were young athletes with me, who always seemed to have honey on hand.

CM: Yeah, they sell individual packets of honey, so that's another easy one.

BG: Some of these question are getting quite fascinating for me. Nutrition for kids who have autism – can there be an impact that you know of?

CM: You know, I seem to be hearing a lot more of that, just like probably you have. Now particularly with a 7-month old daughter myself, it seems to be even more apparent so to speak. I don't know enough about that topic. I've seen some potential – I've seen lots of anecdotal reports. I haven't seen specific data that says these nutrients will either make it worse or make it better, aside from anecdotes. And that doesn't mean it's not there, I just haven't looked into that enough. But, outside of the anecdotes I don't know enough about that area to be honest with you.

BG: Gotcha. I can attest to this question, Chris, and by the way, we're almost done, so I know we're probably around the 40 minute mark now, but I'm going to push through and not worry about a second audio, because I'm toward the end of the blog at this point. Here's a great question – so many times as a coach, Chris, I've worked with national team athletes, and I've love saying that, because everyone thinks wow, national team athletes are Olympic athletes. Yeah, most of the Olympic athletes I worked with were 16. Most of the national team athletes were between 14 and 17. So, these are kids who have real stress, real developmental issues, real teenage life. But a lot of times their practices end 8, 9, 9:30 at night. I can attest to that having more often than I can remember in a given week gotten home at 11 o'clock myself because I was at a national team practice that ended at 9:30 or 10. So, post-training food consumption being it's important – what are we looking at in terms of post-training when that's the end of your training day – 9:30 at night – and you really want to be in bed in the next hour and a half tops. What kind of foods – are we worried about any kinds of proteins that might keep us awake, because I've actually heard that myself?

CM: You definitely want – that's an interesting thing, again you have the athletes who are working out sometimes 4, 5, or 6 hours a day – that's almost their life. But you definitely need to put something in their body. I described that sponge example the other day where when you're done training your muscles are like a dry sponge, ready to absorb everything. And then knowing you're going to bed let's say at 9:30/10:00, and now knowing the next morning you're probably going to have to get up and train again, you don't have much time to re-fuel or kind of re-stock your muscles so to speak with nutrients. Something quick and easy, so I'll use the chocolate milk example again – that's something they make now that doesn't need to be refrigerated until you open them. So that's perfect to throw in your car or have your parents bring you, or throw in your locker. But then when you get home you're going to want something a little more substantial. But think about something fairly quick and easy. Peanut butter and jelly I love – most people like it. Something that is kid-friendly – basic carbs, some protein in addition to that chocolate milk. And then also focusing heavily on the hydration, because now you're going to bed and you haven't re-hydrated. I give very specific hydration strategies within the course, but just to say it here as well, one way to know how much to drink as a general rule of thumb is to weigh yourself before and after training. So weigh yourself without clothes before and after training – for every 1 pound of weight lost, you want to rehydrate with at least or approximately 2 to 2 ½ cups of fluid.

BG: Great, those are some great – that’s fantastic, Chris.

CM: It’s amazing sometimes I’ve had people I work with get really excited about that weight loss like oh, I’m burning all this fat – you’re losing sweat, which is why you have to rehydrate, especially if you’re going to be going to bed very soon, you’re obviously not going to be drinking while you’re sleeping. So, it’s really important to kind of get those fluids in you. That’s another reason chocolate milk works well, because it kind of kills 2 birds with one stone there.

BG: Is there something honestly about milk quality that can be suppressive in terms of helping to regulate sleep?

CM: Not that I’ve heard. I forgot you asked a question about the protein. There’s been some data that certain amino acids within protein may make you increase mental alertness, but not to the point of being jittery and unable to sleep.

BG: Gotcha. Okay, so warming up milk at night might be a wee bit of a wives’ tale?

CM: It might be a wives’ tale – I haven’t seen anything. If that helps you, then no worries at all. If you enjoy it – great.

BG: Chris, is there anything nutritionally that has any sort of honest to goodness research that does help or sharpen mental focus? I’m going to expand that question – be it to sport or even cognitive, like academic disciplines – do we know of anything, and I’m not worried about supplementation – just foods that contain something that are shown to have cognitive functioning enhancement or focus?

CM: Timing is perfect for a lot of these questions. Today’s blog post is about eggs and eating eggs. And eggs have a – egg yolks I should say – have a nutrient called choline, and choline is one of those nutrients that’s shown to be powerful for brain function. So, the other nice things about eggs is they’re really inexpensive and a great source of protein. So definitely include some eggs, egg yolk in your diet. And then we talked about fats the other day – essential fatty acids. Definitely a strong component in terms of mental capacity and mental health. So, looking at those, eating salmon or eating fish – something that a kid would like – maybe tuna fish, a canned tuna fish or canned salmon. Foods like that – so the essential fatty acids and choline seem to have some effects. Blueberries – berries have an antioxidant in there that may have some mental power. There’s been some interesting data particularly with animals at this point, but you never know how that’s going to translate and even if it doesn’t pan out, we know blueberries are great for you.

BG: Great answer, I’ve been dying to get this in somewhere, and you just opened a door for me...here is what I call “Grasso Pie”, and you can tell me if this is good or not. I crack a dozen eggs, put in a full pound of extra lean ground turkey, and then an entire bag of spinach, and a bottle of natural salsa – stir it up, put it into a pan, and I bake it for an hour at 400. And then when it cools, I cut it into literally like pie pieces. Put it in the fridge in a Tupperware – there’s breakfast for me every day for a week. I simply put it in the oven for 5 min. to warm it through or I grab a piece of it and walk out the door with it – it stays in tact as a piece of pie.

CM: I love that. I got to be honest, I at first thought you were going to say that’s breakfast one day...and I was going to be a little nervous, but if you’re carrying that over for a week or so, I think that’s great.

You're getting the high quality protein, you're getting some great nutrients – some vitamins and minerals from the veggies in there.

BG: I can't stand spinach, but I can't even tell it's in there.

CM: Right, you mix it in and you don't even know it's in there. I love it – great, great meal..."Grasso Pie".

BG: And it got the stamp of approval from Dr. Chris Mohr, so I'm there.

CM: When we're at the summit, I want you to bring me some.

BG: I'm down – I'll do it, no problem at all, man. Over-protein consumption and liver taxing – is it a real issue, and if so, I'm assuming that means eat the way Dr. Chris Mohr has already suggested a thousand times throughout his program. But, is over protein consumption and liver taxing a real issue?

CM: No.

BG: Okay. That was easy.

CM: Is that straight forward enough?

BG: I love it, yeah. No need to expand unless you want to.

CM: What I'll say is that's been out there a lot – not liver specifically but usually kidneys because of the nitrogen from the protein when it's broken down has to be excreted through urine. So excess nitrogen then gets excreted, but data after data after data shows that eating a little bit more protein, even there's been data with high protein diets – it doesn't negatively affect or shut down your kidneys or affect your liver or things like that. Now, I'll say with that said, when we talk about protein, and there's obviously different qualities there, so we're looking at super high fat McDonald's big mac is definitely a source of protein – that's not a great source of protein, so it's not the best for you in other regards. But in terms of liver and kidneys, not concerned unless someone had liver and kidney issues that are pre-existing.

BG: Gotcha. I have 2 more questions, my friend and that's it. The great question, I like this one – how do I get my young athlete to drink more water? And I know the answer might be, well I don't know what the answer might be – I don't enjoy water myself, I just taught myself to drink it. But can you add a little Crystal Light, squeeze a fresh half a lemon, and do it so it changes the taste a little bit? What might be a way that parents and coaches can convince kids to drink more water?

CM: Make it creative – so lemon, you know a lot of people do a twist of lemon and lime. Think about other – even other things that make it creative. I've been to different places that have sometimes fruit in the water – which works really well – apples, strawberries, things like that – give that flavor of the fruit, not overpowering but something different from just plain water. So, I'd much rather have folks do that and add the orange, grapefruit, any type of fruit that they like, even things like cucumbers or carrots that are a little outside of the box so to speak – I'd rather have folks do that than drink the Crystal Lights and artificial sweeteners. With that said, I'd also rather have people drink those than not drink anything at all. So, if it takes a little flavoring, no problem at all, but hydration is important. Try the different fruits

and veggies first – it adds a great flavor to your water – not overpowering but just a hint of whatever you have in it.

BG: I absolutely love it, and I'm going to take some of that advice for myself in that I don't like water – unless I'm training in which case I love water. Alright, last question, and it's one that I was intrigued by, so – vitamin D was asked about more than once on the blog as something that a few bloggers of ours feel that should be more prevalent in some capacity. I'm not even too sure I understand the question altogether, but are there foods that are rich in vitamin D that kids should be eating or young athletes should be eating and perhaps are omitting from their diets?

CM: Vitamin D is an interesting one – that's one of the vitamins that's actually recently come up showing that people are becoming more and more deficient in this vitamin. So, for a while, vitamin D initially I guess when I say a while, decades ago, rickets was common, which is one of the side effects from vitamin D deficiency. That seemed to go away over time – more recently, there's been kind of a resurgence of rickets and vitamin D deficiencies. I mentioned earlier I was doing some bloodwork this morning at the doctor's – I asked for them to test my vitamin D and I won't know the results just yet, but she said a significant portion of their patients are now actually testing deficient in vitamin D. So, with that said, in terms of the food you asked me about specifically, the thing about vitamin D is it's one of the ones that's more difficult to get from food, because the food sources aren't a lot of the most common ones that we eat. Canned salmon works well, sardines work well, probably not the most common in most kids' diets. Milk is fortified, so that's another plug for getting some dairy in there – getting some milk I should say. Egg yolks have some vitamin D. Again, it's a more difficult one to get from the diet, but it's the only vitamin as well that's made from the sunshine. So, when you're out you need they say only about 10 maybe 15 minutes a day of sun. But then again, if you're living in where you live in Chicago or in one of the northern areas, even when it is sunny you're still not – it's not very powerful. So, that is something that I would definitely talk to a healthcare practitioner – talk to the child's physician about or other healthcare practitioner about considering a supplement, because that's one that has seemed to emerge. I know Ella, my 7 month old daughter takes 400 IU's a day of vitamin D, because they recently re-released that infants need to take 400 IU's a day – the American Academy of Pediatrics, so becoming more prevalent with kids and with adults as well to consider a vitamin D supplement.

BG: Wonderful answer, and wow, we're done. That was so much information. Everyone's going to have to listen to this more and more, because that was almost a full hour of just top notch, world class answers. Chris, you were amazing, and I can't thank you enough – this was absolutely perfect.

CM: I appreciate that – thank you so much! Thank you everybody for listening in.