Podcast Transcript

Insulin Resistance Explained: Causes, Symptoms, and Solutions

Guest: Jane Oelke, ND, PhD

With over 30 years of experience in natural medicine, Dr. Jane Oelke is a highly qualified naturopath and wellness expert. She holds a Bachelor of Science in Mechanical Engineering, a Master's in Health Care Administration, and a PhD in Homeopathy and Energy Medicine. Certified in functional medicine and as a national health and wellness coach, Dr. Oelke integrates a holistic approach to patient care. Dr. Oelke has authored two influential books, "Natural Fibromyalgia Choices" and "Natural Choices for Attention Deficit Disorder," offering practical guidance on managing these conditions through natural remedies. She practices at her office in St. Joseph, Michigan, where she continues to help individuals achieve optimal health and wellness.

Host: Candace Pierce DNP, MSN, RN, CNE

Dr. Pierce is a nurse leader committed to ensuring nurses are well prepared and offered abundant opportunities and resources to enhance their skills acquisition and confidence at the bedside. With 15 years in nursing, she has worked at the bedside, in management, and in nursing education. She has demonstrated expertise and scholarship in innovation and design thinking in healthcare and education, and collaborative efforts within and outside of healthcare. Scholarship endeavors include funded grants, publications, and presentations. As a leader, Dr. Pierce strives to empower others to create and deploy ideas and embrace their professional roles as leaders, change agents, and problem solvers. In her position as the Sr. Course Development Manager for Elite, she works as a project engineer with subject matter experts to develop evidence-based best practices in continuing education for nurses and other healthcare professionals.

Episode 1: Insulin Resistance Explained: Causes, Symptoms, and Solutions

Transcript

Candace Pierce: Welcome to our podcast series on Insulin Resistance Explained: Causes, Symptoms, and Solutions. This is Dr. Candace Pierce with Elite Learning by Colibri Healthcare, and you are listening to our Elite Learning podcast, where we share the most up-to-date education for healthcare professionals. Joining me for this series is Dr. Jane Oelke, and I want to put a plug out for some of her other webinars that she has done for us on functional medicine and autoimmune diseases, as well as understanding the gut-brain axis. She has a wealth of information and shares some really great insight into these topics. Thank you so much for taking time to join us today, Jane.

Jane Oelke: You're welcome. I'm excited to be here.

Pierce: Now in this podcast series, we're going to cover the fundamental aspects of insulin resistance, including its pathophysiology, diagnosis, and management strategies. And I'm selfishly excited for you to be here to discuss this topic, Jane, because I know we are seeing more and more people being told that they're insulin resistant, including myself. And so, I understand that it ties into those hormonal issues. And one really important hormone that I think a lot of, especially healthcare professionals, have a really high level of, because, you know, maybe starting with the pandemic, and that's our cortisol, our stress hormone. And so, I know that our high stress levels really increase our belly fat, which increases our insulin resistance. And you just get this really vicious cycle with not much direction, or I haven't really felt much direction myself, on how to break this cycle.

Oelke: That's exactly true, what you just said, that's for sure. It's a major problem depending on who you read about insulin resistance. Dr. Mark Hyman, out of the Cleveland Clinic, talks about it a lot in his Longevity book and how to prevent aging. The actual number one thing is not to have insulin resistance. It's like, okay. But he says nine out of 10 Americans do have some level of it. It's not a disease exactly. It's a metabolic imbalance that's going on in many, many people, obviously, and it is an important topic, as you said, because it leads to, like, well, it leads to, for sure, obesity, but it also leads to heart disease and cancer and Alzheimer's. And actually, one of the books I look at for Alzheimer's, lists insulin resistance as one of the three top things to prevent Alzheimer's. The other two are keeping your blood sugar in balance, insulin resistance, and then it's inflammation and toxins. So, it's a major topic that we all need to pay attention to daily — what we're eating, not eating, and our lifestyle. And it is, like you said, a lifestyle, and stress can cause it for sure.

Pierce: Absolutely, and you know I've been told a lot of things: increase my omega-3s, take Berberine hydrochloride, take cortisol manager supplements, do yoga, do weightlifting, don't do high-intensity workouts, and yet I've tried all those things. I've done all those things, and I still feel like it is such a struggle. It's just overwhelming and really just disheartening to try to figure out how to effectively manage this since, you know, as you're saying, it can really lead to a lot more severe health issues like type 2 diabetes and cardiovascular disease and Alzheimer's disease. And so, our goal, I hope, with this series for listeners, is to really equip you, if you are going through this vicious cycle, to be able to break it and just really ensuring that you have the knowledge and tools to educate and manage insulin resistance in patients. So, Jane, for this first episode, can we really delve into the basics of insulin resistance? Its pathophysiology, its implications for patient care? So, what is insulin resistance, and how does it develop?

OELKE: Well, as I said, insulin resistance is a metabolic imbalance that is not a disease specifically. Basically, it's when our cells in our muscles, fat, and liver do not take up insulin the way they're supposed to, and it causes all sorts of metabolic imbalances. As we know, insulin is a hormone made by our pancreas that's in charge of regulating blood sugar in our cells. And so, when we eat something like a high-carb or high-sugar food or something like that, our body takes in that sugar and glucose, and insulin is supposed to be put into where it's supposed to be so we can actually create energy from that sugar. We need some sugar, not a lot, you know, so we do need some carbs, you know, but we're eating too many carbs and not moving enough, which is a major cause of insulin resistance. As we know, insulin helps break down our food to make energy. And then it actually makes energy or stores it as fat, and that's where we get the belly fat from. It's protecting us. It's almost like our liver is telling our body to store this fat in case we need it later. We usually don't need it later, but we have it stored there in case we need it later, you know, depending on how much stress we have. So, it's like, shoot, why am I storing this? And that's usually the number one complaint of people as they get older or, you

know, they get out of shape, gaining all this weight in my belly. Why is that? And usually that's because of insulin resistance. So, in a way, to actually burn fat, we have to keep insulin in check. So, when we get too much insulin, we have a lot of problems with that. So, we do need glucose in our muscles and fat and liver to create energy, and we actually need glucose in our muscles to have muscle strength to exercise and to be able to do that. So, if your muscles are weak or you can't get enough energy in your muscles, look at insulin resistance as one of the causes of that. Of course, excess dietary sugar is the number one cause of, and starches too—not just sugar, but starches, and starchy foods can cause insulin resistance. But over time, what happens with insulin resistance is our body keeps making insulin, but it doesn't get absorbed the way it's supposed to. It's almost like when someone has headphones on all the time and is listening to loud music, and over time they have to keep turning the volume up so that they can hear more. And so, like at home, the TV goes up louder and louder because you can't hear it anymore. Same thing with **our cells—**the receptors of our insulin in our cells are blocked, so the sugar can't get into the cells. And so, we keep making more and more insulin, which isn't really the cure, you know. We're making it to actually keep the blood sugar in balance. Basically, we need to make sure that we're keeping the insulin level down to be able to burn fat, but we also want to increase energy in our cells so that we can make energy and build muscle. Basically, one of the symptoms, or a lot of the symptoms, when we have insulin resistance is cravings for sweets. First of all, how many sweet cravings do you have? Are you always hungry? Do you need to eat often? I recommend at least a 12-hour fast a day. I personally do seven to seven, 7 p.m. to 7 a.m., where I don't eat. And sometimes it's 7 a.m. to 5 p.m. So, with a 12 to 14-hour fast, a lot of people can't do that. They say, gosh, I have to eat before I go to bed. Or, I had one client last week who said, I have to eat at three o'clock in the morning, otherwise I don't have any energy. That's really a really poor sign of insulin imbalance and stuff like that. So basically, how often do you need to eat? That's something to pay attention to. Look at your blood lipid panels, which we'll look at later, and I'm talking about later. Excess waist size. How big is your waist compared to the rest of your body? They say, ideally, we're supposed to have a waist of, I'm laughing, too, because I don't have this, but a waist of 35. And I was like, ooh, you know. For men, it's 40. And they go, my gosh, you know, so a lot of people as we get older, we don't have that ability to have a you know, and is your waist bigger than your hips and things like that? So, we look at that as a measurement and pay attention to that. So how tired are you after eating? Does food give you energy or leave you tired afterwards? So again, how much energy are you taking to digest the food that you're eating? Are you? Okay, yes, so that's a yes.

PIERCE: I'm tired. I'm tired after I eat. Yes, I do find that I am tired. So that's part of insulin resistance.

OELKE: Yes, some people get headaches, you know, but no clear reason for headaches. That's a real common indicator of insulin resistance — you know, just kind of a chronic headache, waking up with a headache, something like that. Why do I wake up with a headache? Okay. Look at cortisol, we'll talk about that later. It's out of balance and could cause those symptoms. So, some people have high blood pressure. Somebody says, why do I have high blood pressure? I can't get it to come down. Again, look at insulin resistance. These are some symptoms that seem... you know, pretty common, even frequent urination. Do you waking up at night and going to the bathroom very often? Again, that could be a sign of insulin resistance. Like, you know, so it's just one of those common things. Dizziness, hypoglycemia, you've heard of maybe that. I call it being hungry and angry at the same time—. So, let's say you had toast for breakfast and about 11 o'clock in the morning, you're like, you need something, you feel like you want something. You start getting dizzy and you start getting upset easily. They call it hangry; you're upset and hungry at the same time. So, you're angry and hungry, you know, and so kids get that in school when they eat, you know, start to eat foods for breakfast and then before lunch happens, they need to have more food, you know, or they get upset and they can't think and that's another problem. Brain fog is another symptom or mood swings. That's another symptom that we don't think is

related to that. Even inflammation, chronic inflammation is related to insulin resistance. And skin tags, things like that, or PCOS in women (polycystic ovarian syndrome), where sometimes young women don't have periods for a long time, that could be a sign of insulin resistance. So, there's so many different signs that we don't really think about are related to that.

PIERCE: How do you narrow it down to say this is insulin resistance versus some other condition? Because that's a lot of signs and symptoms that can lead you to insulin resistance. So, is this a rule out?

OELKE: No, basically, you can look at the number of symptoms that you have for one thing — just do you have a lot of those symptoms and no reason for it? I mean, if you wake up at night with frequent urination, is it because you drank a bunch of water before you went to bed? Or is it, you know, why am I waking up every two hours at night? You know that kind of thing, you know? So, there's a lot of different reasons for that. You know, sleep apnea could be another related thing to actually some of the symptoms. So that could cause it too. You know, so there's like, there's so many different underlying metabolic factors that can be caused by insulin resistance. That's the major problem.

PIERCE: It just seems like there's so many. So, I mean, you mentioned PCOS, you mentioned sleep apnea. I just would not have thought that those are related back to insulin resistance versus something else, some other process that was going on in the body.

OELKE: Yes, when our blood sugar is out of balance, we can't create the energy that we need in our cells. I know in Chinese medicine; they call diabetes actually a wasting disease. So, you're not able to make the energy that you want. Well, this is not quite diabetes yet, but you're heading toward that direction. So basically, you want to stop it before it starts, that kind of thing in this case. Like I said, nine out of ten people have it, according to Dr. Hyman. So, most of us have it, and most of us have to keep it in check as much as possible by what our lifestyle is doing right now, you know, our choices every day.

PIERCE: So as far as going through the symptoms, is this kind of like when you meet with a patient, do you check off the symptoms and then double-check that it's not because of something else? Then that's how they... Because is insulin resistance a diagnosis? Is that like a true...?

OELKE: I don't think it is yet a diagnosis specifically. I think it's a metabolic imbalance as it starts. That's like before you get to pre-diabetes. There's a number of ways of measuring potential insulin resistance. There's a way that I do it. Basically, you can look at the fasting glucose to find out where that’s. And it should be at least under 100, maybe 95 is where it's supposed to be. Then you can also, if it’s between 100 and 129, that is pre-diabetes, and over 129 is diabetes. But if you're on the borderline of around 100, you’ll need to watch out for pre-diabetes. But also, you can look at your insulin blood level. I've actually never had that checked myself. The one thing I look at as a marker for how much insulin resistance I have or don't have is the triglycerides over HDL ratio. So, triglycerides are basically a sign of how well you're breaking down sugars and if you're moving enough to burn them. So, if your triglycerides are high, and they are in many, many people, you should look at that level. So, it shouldn't be over 150. Actually, ideally it should be under 100 now. I believe it should be under 100. But if your triglycerides are high and then your HDL level's not high enough, you have an imbalance there. For example, if your triglycerides are 150 and your HDL's 50, to make it easy, you would divide 150 by 50, that's a three. So that would be on the borderline of diabetes, actually. You want it under 1.5. So, I'm not sure what the math would be. You'd have to have a—I'm trying to do the math—but to make it clear, 150. So you have to have like a 100 over 50, which would be a two, right? So basically, you want to see where your HDL should be higher. So, you want to see where that's at. That's a really good

marker. If someone's triglycerides are high, I definitely look at that as a marker of insulin resistance just by itself. But when you combine it together with HDL, that makes a big difference.

PIERCE: What role does, like, high cortisol levels play in the development of insulin resistance?

OELKE: Huge levels, as you said. Hormones being out of balance basically is one of the causes of the hormone imbalance—cortisol. Cortisol, as we know, is what I call a coping stress hormone. We all have it; we use it to respond to stress in our lives. We all have stress. How do we cope with it? How do we react to stress? So basically, it's our built-in alarm system. It controls our mood, our motivation, our fear. And it's made by the adrenal glands, as we know. And it basically goes up in the morning when we wake up. That's one of the things that wakes us up in the morning. And when we can't go to sleep at night, it might go back up, you know, that kind of thing. So, you can actually measure your cortisol level, and they do like four different tests during the day—for, you know, one of them being early morning. Yes.

PIERCE: Saliva test. Yeah, I had to do it and, you know, I used this tube four times in that day: as soon as you wake up, like around lunchtime, around dinnertime, and I believe bedtime. So, you had to spit into a tube. So gut is, I mean, not gut, but food, nutrition—the food that we put into our gut really does play a key role in insulin resistance and other metabolic syndromes that we see.

OELKE: Yes, what are you choosing to eat? I call it a whole-food diet. You know, food that doesn't have a label on it, like an apple or an orange or broccoli, something that's not been broken down into a box or a bag or processed. So yes, you mentioned autoimmune diseases and, you know, with insulin resistance, that's a major factor even in autoimmune disease. The metabolic syndrome, and all the different parts of metabolic syndrome, can cause our immune system to go out of balance.

PIERCE: You know, when I was going through nursing school and all the other classes and stuff that we had to take, we talked a lot about, you know, hypertension and dyslipidemia, metabolic syndrome, and PCOS. But not once do I remember ever discussing insulin resistance and the effects of insulin resistance on the body. It was either, "You have your blood taken and you're prediabetic. We have to get this number down." But it wasn't until just recently that someone sat me down and was like, "No, we have insulin resistance, and we have to figure out how to fix this." So, is this more of like a new conversation, or why are we just now hearing more about it?

OELKE: It's a good question. I might have heard about it. I've heard about leptin resistance. Leptin is another hormone that is called the "anti-hunger hormone." That one basically signals when you eat something, whether you're satisfied or are still looking for something else—like, "I know I need some sugar; I need this." And that's related to insulin resistance. They've been trying to study that for a while, so it's been around for a while. I think it's just becoming more popular because it's estimated that one in three people are diabetic nowadays or prediabetic. They also estimate that half the country could be diabetic by 2030 if we're going in this direction. So, I think we're paying attention to it more now than we used to. We're asking, "What are the underlying causes?" We want to prevent diabetes or even prediabetes. And that's probably why it's coming up right now.

PIERCE: Right. I just wondered why we haven't talked about it more. I find it frustrating as a patient but also as a healthcare provider because, you see, we're talking about all of these issues—hypertension, dyslipidemia. How many of our patients deal with this versus us understanding and being like, "Let's

talk about insulin resistance. Let's start looking at how we can fix this root cause of so many issues that we see today."

OELKE: Yes, some of it might be the fact that it's mostly a lifestyle thing. You know, it's basically about what we're eating and whether we're moving enough. So that's the number one and number two causes of it—not what we're eating and that we're not active enough. And people sometimes don't want to hear that. They want a quick fix for it, and it's not there. Plus, the stress level, as you just mentioned—the cortisol. You know how our body deals with the stress. Some of it's, "Well, just reduce stress." Well, it's not that simple. You know, we're busy people. We want to do what we want to do, and then the stress not only gets in the way but also causes problems. It can lead to insulin resistance and cortisol imbalance, which disrupt the body's balance. So, it's just a big lifestyle conversation basically.

PIERCE: With insulin resistance, it seems that we still treat more for the symptoms. So, if we're treating for hypertension, dyslipidemia, or prediabetes, are we just focusing on a band-aid fix versus the root causes of these issues?

OELKE: Yeah, I think we need to go to the root causes, and sometimes we are just covering up the symptoms. We're trying to find the fix for what's out of balance, but we're not actually addressing the root causes. And so, trying to get people to understand that is key. You're choosing to eat every day—breakfast, lunch, and dinner. We talk about 12-hour fasting; that's relatively a new thing. Some people think you should be grazing, but I don't think we should be grazing. It's actually one of the ways to keep blood sugar balanced—not snacking and doing like a 12-hour or 14-hour fast a day. That really does help with insulin resistance.

PIERCE: Right. So, six meals a day is not helpful with insulin resistance. Is that what you're saying? Six small meals? Because I know that's popular too, especially for people who are working out and trying to watch their diets. It's six small meals. I know another one that has been really popular is the Whole30 diet, which is more of those fresh fruits and vegetables that you're talking about.

OELKE: Yes. That's what I'm saying. No, no, no.

PIERCE: The idea is to avoid inflammatory foods, right? Because I'm assuming that those inflammatory foods are also what cause a lot of that insulin resistance that we see.

OELKE: Right, yes. Inflammation is definitely linked with insulin resistance. I'm not sure which one causes which, but I think insulin resistance actually can cause inflammation, again because of the foods you're eating that cause inflammation. And especially the combination of foods can contribute to the problem.

PIERCE: So, if we had someone who wanted to walk into their doctor to be checked for insulin resistance, what should they say to that provider? What should they ask for?

OELKE: Well, basically you'd look at symptoms. Do they have symptoms of hypoglycemia or hyperglycemia? You'd also find out about their diet. But I would recommend doing blood work—functional blood work—looking at the lipid panels, finding out where the triglycerides are, finding out where HDL is, and combining those two together. Also look at their fasting blood sugar and hemoglobin A1C. Of course, A1C is a good marker. It should be under 5.7%. If it's over 5.7%, you're

prediabetic. These are all markers that we often use. But some providers might say, "It's okay if you're prediabetic." I don't believe it is. So, you want to find out where you're at. Measure and find out where you're at so that you can make better choices and have goals that you're working towards to reduce your risk.

PIERCE: Right. Well, Jane, that wraps up our time for this first episode. Thank you for spending time clearing up what insulin resistance actually means.

OELKE: Well, you're welcome. Thank you.

PIERCE: Yes, to our listeners, if you enjoyed this episode, make sure you check out episode two where Jane will be joining me to continue this conversation to discuss strategies and interventions to help with managing insulin resistance.

Episode 2: Insulin Resistance Explained: Causes, Symptoms, and Solutions

Transcript

Pierce: Welcome back to the podcast series on insulin resistance. I'm your host, Dr. Candice Pierce, and joining me to continue this discussion is Jane Oelke. Jane, thank you for taking time to continue this discussion with me.

Jane Oelke: I'm glad to be here.

PIERCE: Listeners, if you have not checked out episode one, understanding insulin resistance, I really encourage you to do so. Jane shared some really great information to really get down to the basics of what is insulin resistance. So now before we really jump into managing and treating insulin resistance, I wanted to kind of share some eye-opening statistics just around insulin resistance and pre-diabetes. So, Jane, feel free to interject anything around these statistics and I do tend to talk fast, so just jump in if there's something that you want to share. I saw where the American Heart Association actually identified insulin resistance as a significant risk factor for, I guess you could call them precursors to cardiovascular diseases. So more likely to have hypertension, dyslipidemia, which we know leads to disease and stroke. The CDC has estimated 88 million American adults. So that would be about one in three have prediabetes often associated with insulin resistance. And the CDC has also identified that insulin resistance and its related conditions like type two diabetes disproportionately affect certain ethnic groups. Most significantly they've identified Hispanic, and the African American populations have higher rates of insulin resistance and diabetes compared to non-Hispanic white population. So, these are some really eye-opening significant statistics for something that I don't think is talked about enough or maybe even treated enough. What are your thoughts, Jane?

OELKE: That's true. A lot of what you just said is really true that certain ethnic groups have an issue more so than others. And it could be underlying how they're eating, and they're just grown up that way. So, they have to watch it more. History of gestational diabetes, different how you live your life, different things. Heart disease is a major factor in insulin resistance. It's one of the underlying causes of

metabolic syndrome. So, we're trying to get that all into balance and check. It shows up in many different ways in our bodies, both with symptoms and with blood markers and things like that.

PIERCE: All right. So, looking at lifestyle modifications, what are the most effective lifestyle modifications that are actually effective in managing resistance?

OELKE: We talked earlier about how many processed foods there are; we'd say about 67% of our diet is ultra-processed foods. What's ultra-processed? Anything that comes in a box or a bag that has many different ingredients in there, some of them we can't pronounce. Again, that breaks down not just to sugar, there's a lot of sugar in those foods. But I actually recommend my clients try to buy anything with no added sugars. It's like, my gosh, you know how hard it is. I teach them in some of my classes. I said, your homework is to go out and find a snack that doesn't have any added sugar. And there are some out there. You can come back with them. So, I have my favorites and things. So, there are some out there. But you want to look at something that doesn't have a lot of added sugar. Whenever you add sugar to something, it causes some level of insulin resistance. And processed starches too since different starches turn to sugar. And I've heard about the glycemic index. You've heard about that and that glycemic load? I use a lot of glycemic load numbers with my clients to find out, you know, what they are eating? Are they getting too much, too many foods that turn to sugar in their system? So, are they eating a lot of starches that have higher glycemic load numbers? And so, I recommend when you look at the glycemic load points to keep it between 50 and 80 a day to keep your blood sugar in balance. So, looking at what you're eating, is that mostly carbs and starches that break down into sugar very quickly? So, I don't believe every carb is the same. Different vegetables don't turn to sugar as quickly. Certain starches turn to sugar way too quickly. So, depending on how much fiber is in it, also if you're going to go eat bread, make sure it's got a lot of fiber in it. At least three grams per slice. Again, look at, my gosh, again, that's hard to find. Actually, ideally organic too, but that's another story. But again, looking at, keeping it as clean as possible. So basically, looking at what you're eating every day. Are you eating a lot of high-starchy foods? Sometimes with my coaching clients, I have them write down what they're eating and have it analyzed on my phone or on their phone to find out how many, percentages of carbs, fats, and proteins. I like to keep it pretty even. 33% of carbs, 33% of protein, 33% of fat. Keeps it pretty even. And you can do this easily and find out what you're doing because a lot of people find out they're eating like 80% carbs, you know, and wondering why they can't lose weight, you know, that kind of thing. So, it's something to pay attention to. But again, as much whole food as possible in your diet, real food, not processed food, not ultra-processed food, and just trying to clean up the diet and keep it as simple as possible is the number one thing. But another thing is a 12-hour fast. I mentioned it earlier, but I think that's really important not to eat continuously during the day, trying to do breakfast, lunch, and dinner. So, if you eat breakfast at seven, lunch at noon, and dinner at five or six, you can stop eating by seven and then don't eat again until seven o'clock in the morning. Again, that's an anti-aging factor that's called restricted time eating. It has been shown to keep longevity going and stuff like that. So if you're eating all the time, in fact, to sleep better, ideally you don't want to eat three hours before you go to bed because if you go to bed, your brain's cleansing itself at night. So, you want to make sure that you're giving your body time for your brain to clean itself. If it doesn't have time to do that, it's not going to work well, causing a lot of brain fog the next day. So, if you're eating before you go to bed and your body is spending time digesting food, you're not going to actually get your brain to cleanse at night. Again, stopping eating three hours before bed is the first thing I tell people to do and then go to the 12-hour fasting. So, create something called autophagy, which is the breaking down of old metabolic waste, which we need to do. I mean, that metabolic waste is one of the underlying causes of cancer, these cells that are unregulated and stuff like that. So, again, you want your body to be able to cleanse itself. And when you're not eating, that's the only time that you have time to do that. So that's important, I think. So super important.

PIERCE: So, when you're talking about fasting, I know you've mentioned 12 hours, but I've also seen people who are like 18 hours of fasting. Is there like a set amount of hours? Is better or?

OELKE: I don't, I mean, yes, you could do the 18-hour fasting. The trouble is I want to make sure that you're eating at least twice a day. When somebody says, I just eat once a day, that's kind of hard on the blood sugar. You know, again, it's too much work for the, you know, for the energy for the body. So, I like to have at least two meals a day if you're going to do meals, whether, you know, let's say at noon and six o'clock at night or something like that would be like, you know, six hours, right, something like that. You know, but you want to make sure you're eating at least twice a day. So, for the blood sugar in control and see when you're hungry, you know, I tend to be hungry in the morning. I want to eat breakfast. I can stop eating early in the evening. But you know, some people want to eat later in the evening, so they don't have breakfast till like 10 o'clock, you know. So again, find out when you are hungry and kind of go with your metabolism because someone says, I can live without breakfast and some people can't. So, you want to find out what works for you in fasting and go with what your body's telling you.

PIERCE: Right. What about physical activity? Cause you know, I've heard different things like don't do high intensity workouts. If you have insulin resistance, focus on things that lower your cortisol levels like yoga or walking. So, what, what are those good modifications for physical activity?

OELKE: Well, we need to build up our muscle. So basically, one of the things is our glucose goes into our muscles to create energy. So, if our muscles are weak, and one of the things of insulin resistance, if we can't get the energy to the muscles, we get more muscle weakness. So, one of the anti-aging factors also is building your muscles up. Muscles use more sugar than for energy, so exercise is super important. So, we need to do that. It helps keep the blood sugar in control. So, the more you're exercising, the more you can use up the excess sugar. So, if you are eating some carbs, that's why some people do some carbs before the exercise, because they're going to use those carbs in the muscles right away to use them. So that makes some sense. But what you said is, walking is actually a great exercise, because it doesn't stress, strain your muscles, your knees. And it's not excessive. And we all need to walk. I recommend measuring steps a day to see how many steps you're getting, if you're not getting them regularly, if you're sitting down too long. A lot of different devices will measure how long you're sitting. We're not supposed to be sitting anymore. We're more than an hour at a time, which is difficult if you're working. So basically, the more the imbalance of exercise, losing weight is helpful too. But again, you want to reduce that, like all the visceral fat in your system and exercise helps that because you want to get that visceral fat, the belly fat, basically it's an active form of causing inflammation in your body if you have that. Again, exercises that help remove that belly fat is super important too. And like you said, like high intensity exercises. Sometimes that raises cortisol, and it can stress you out too much. Again, you have to find out where your ability is on exercising, how much you can handle and not doing too much are things that can cause stress or injury if you're doing too much and things like that.

PIERCE: Right, absolutely. Are there any other types of lifestyle modifications that we should look at alongside what we eat in our physical activity?

OELKE: Well, a couple of things, you know, to reduce cortisol levels, you need to make sure you're sleeping well. You know, that's another thing. I know a lot of people have issues with that. Basically, like sleep apnea, we talked about like that. Finding out, what, again, we talked about not eating before you go to sleep. Sleeping is important. Reducing stress, you know, meditation is helpful for reducing stress. Yoga, things that just kind of calm your body down. Just, again, when you're having trouble sleeping,

what do you do? I tell one of the things I teach in my classes to reduce stress is something from Brain Gym. I've never heard of Brain Gym. But what you do when you're stressed out is just put your hand over your forehead. And you'll see people doing this when they're stressed out. You'll just say, my gosh, I'm so stressed out. And that's an instinctive action, basically. There's two neurovascular holding points right here. If you look up in Brain Gym, it's called positive points or emotional stress release points. So, when you put your hand over your forehead and breathe, you can actually calm down your stress level in your whole body. So, when someone comes into my office and I have an anxiety attack or they're stressed out about something or have had something happen on the way here, you know, traffic or something, I said, just either put your hand over your forehead or I put my hand on their forehead very lightly. I'm not pressing at all. Sometimes I'll put my hand over the back of my head and have them talk and I'll say, OK, just talk. And then all of a sudden, they'll just do a big and relax, and the whole layer of stress has gone out. So, you can do this for yourself, and just kind of reduce your stress level and help kind of calm yourself down. There's a lot of different techniques that you can use, and I use that one a lot. Did you? Okay.

PIERCE: I did feel it. I mean, when I did this, just, just the breathing with it, I did, I felt a difference.

OELKE: Yes, it makes a difference. Actually, I used to teach anatomy and physiology class at the college and I used to tell my students, I said, if you study your work and stuff like this and then you get to the test and you forget everything, I'd say, put your hand over your forehead because that's the frontal lobe of your brain, that's your filing cabinet of all your memories and stuff like that, it'll come to you and it works. And they come back, and they say, it helps me. It helps with your memory too. So, if you're having trouble remembering something, your shopping list, you know. Just kind of, that helps with that. Right, learning a test taking technique. Yep, exactly, it does work. You know, it's just, we're learning different things that can reduce stress. The other thing I do is heart center breathing. Have you heard about that? No, just, instead of stressing out about your mind, just breathe through your heart. It's something through heart math. And heart math, where they just, instead of being stressed out, you just put your hands over your heart, one hand or both hands, and just breathe in five.

PIERCE: Test-taking technique right here.

OELKE: Breath and then breathe out five breaths, slowing your heart rate down. That slows your blood pressure down, gets your body into coherence. If you think about something you appreciate or something you're thankful for, gratitude, it really stresses your body and gets you something called coherence, and your body can regulate itself more. So, whenever you're stressed out, you can do this too. And that's another way. If I'm having trouble sleeping, I'll just do that and then poof, I'm asleep.

PIERCE: I find this better than the, you know, the box breathing, you know, the strategy of, yes, both of these seem more helpful than the box breathing to me personally.

OELKE: Okay, right. Now, whatever works for you, you find out what works for people. And those are the two of my two favorite things to do with clients and teaching them like just, you know, how do you reduce stress? Because we all have stress. You know, the core resolves there, how do you reduce it? And, you know, that's what keeps us awake, you know, at night and thinking about what your stresses are, things are happening and, you know, whether you're going to have a talk to give or a trip to go on or something. It could be good stress, but that can still cause stress and lack of sleep and cortisol to go up.

PIERCE: Mm-hmm. Yes. My daughter is recovering from CRPS, complex regional pain syndrome. She's in remission now with her pain gone, but one of the things that she came home with was a tool. I'm trying to remember what it's called, but it basically does vagal nerve stimulation. And so, it touches these areas and then it vibrates those areas first for like, I think three minutes to help with calming down that nerve and the nervous system response.

OELKE: I haven't heard about that.

PIERCE: Yes, so but I feel like it goes right along with, you know, where you're talking about calming yourself down and being able to knock yourself out of fight or flight. It seems like the fight or flight is really what messes us up with our cortisol levels.

OELKE: True, yes, our bodies are in that danger response. They call it cell danger response when we can't create the energy we want. Another thing people are getting into is just your body in a cell danger response, or you're always fearful of something going on. It can create energy, it can't do two things at once, and that can cause mitochondrial weakness, and that's another whole topic. Yes, so yes.

PIERCE: Yes, we have so many rabbit hole topics we could go down with this. It's so good. I love this. Thank you so much for sharing all of this. So, we have diet, we have exercise, have go to sleep, we have stress techniques. Is there anything else as far as the lifestyle modifications that are helpful?

OELKE: I'm trying to think of some, you know, there are some supplements available. Supplements, again, you have to make sure that you're taking the right ones and stuff like that. So don't just take anything over the counter, stress reduction things. I mean, there's, you know, people take lemon balm for calming. There are different herbs out there that help. So sometimes that helps, you know, there's ashwagandha, which is an herb that helps a lot with cortisol, specifically, you know, actually. I went to a MD; I went to see a doctor last year for stress and he recommended something called Calm Your Brain. It's like, shoot, okay. So, it's got a lot of value in it. You know because he says you're a pretty driven person and you do a lot. And so, he says, okay, you need something to calm your brain. So, it's called Calm My Brain. And so, I take that, you know, to calm my brain. And it does help, you know, it reduces it. So, there are things out there, but you have to find what works for you, because different things work for different people and depending on your, again, I look at blood work to find out, you know, what do you need? Do you need more B vitamins? B vitamins are very important also for reducing stress, especially, you know, they're found in dark green leafy vegetables. So, when you're eating dark green leafy vegetables, you can get the benefits of B vitamins. But a lot of times we need B1 for stamina if you're always tired, know, B3 for niacin for circulation, improving circulation, B6 for nervous system energy if you've got tingling going on in your body. B9 is folate, you know, for methylation and then B12 for improving memory and things like that. So, we need them all, you know, so just taking one is not working. But I like taking a complex of B vitamins. A lot of times people notice a huge reduction in cortisol levels and stress when they get the right amount of B vitamins in their diet or in their supplementation. So that's another area to look at and see what's going on with that.

PIERCE: I need to write that down, B vitamins. So, you know, talking about supplements, what about any pharmacological treatments that may be available for insulin resistance along with the supplements?

OELKE: Right, there are not officially any medications for it. You know, again, we look at metformin for diabetes and things like that. There are some side effects with taking that. You don't want to be taking that unless you absolutely need to. That's a common medication for diabetics. And some people have

reactions with that. There's a lot of different things that can happen with that. So basically, there's another one we've watched commercials for nowadays. I'm going to mention any names, but the GLP-1 injections that you see on TV. But again, those are used now when they were used mostly a few years ago just for diabetics to balance that glucagon peptide like peptide, you know, GLP. And it balances that, you know, so basically it can cause a lot of problems. But it does in a way kind of work for insulin resistance. I'm not recommending it. Most of the clients that I have that have tried it have gotten off of it. Again, it can cause, it actually triggers insulin release too, I'm looking at some notes I have about it because it's relatively new to me, the triglycerides release from the pancreas, and it blocks glucagon secretion. So increases blood sugar, when necessary, you know, so and then slow stomach emptying, and that's where a lot of the problems come in. You know, people get, they get nauseated, they get all sorts of problems from that because it just stops everything from happening. So that's one of the major side effects from that. So, I don't really recommend it for that reason. But again, looking at your hunger feelings. There are other things, like you mentioned, berberine is something that a lot of people use, another herb that helps. I've used that with a number of other things trying to find out what other herbs works with it. I haven't found the one that works with it, but berberine is one of the common supplements that actually does work similar to GLP-1, but not by itself. There are other things that can work with it.

PIERCE: Going on berberine, I was going to ask too, like if somebody was looking at taking berberine for insulin resistance, is there a milligram that, and what side effects, like diarrhea, vomiting?

OELKE: No, no, no, it doesn't do that. It's, to me, actually, berberine and whenever I've used berberine before, they use it to improve the effects of other things that it mixes with. So, I've seen it added to things to actually increase the actions of the other herbs. So now they're starting to use it by itself. So, I use it, you know, along with milk thistle, alpha-lipoic acid, and L-cysteine for energy. It kind of increases different things going on in the body. So again, it's, to me, I'm not sure how many milligrams. I'd have to look at a label of something I don't have in front of me. Usually around 300 milligrams is what most herbs are pretty safe at. But you don't want to do too much. Too much of any herb is not recommended. Again, like I said, it's usually something that activates other things that you're doing. Again, to me, it's something that you want to add with other supplements that you're doing to see if it's going to help work with you specifically.

PIERCE: Okay. Yes. I know one of the things that I'd heard about with berberine, such a tongue twister, is it has antimicrobial effects, discouraging for long-term use or someone I've talked to somebody who had done a month on, a month off due to the antimicrobial effects of it. I don't know if you're familiar with what they're talking about.

OELKE: That's not too much about that. Again, like I said, it's often put in things in minimal amounts just to support things. Yes, antimicrobial, it's good to keep the microbes in check, but not constantly killing them. I don't know if it actually kills off the microbes.

PIERCE: Another one that I'd heard was omega-3s, high doses of omega-3s.

OELKE: Sure. Yes. Fats, omega-3 good fats. Basically, our cells are made of fat, you know, so we need to make sure that we're not avoiding fat. We need some good fats in our diet. Basically, like I said, if you're not, if you don't, you're trying to totally prevent fat, you can get like hard and crusty cells, which you don't want. You'll get stiffness in the body. So, they're anti-inflammatory omega-3s. So, if someone has inflammation, that's the number one thing I look at that, you know, for that inflammation, also for blood sugar balancing, it does help a lot. So, I recommend quite a bit of omega-3s, and usually a

minimum of like 1,000 milligrams a day, and then up to 2,000-3,000 milligrams a day, depending on if you're having heart disease. Again, it is, it can be almost like a blood thinner, so you have to be careful if you're on medications, because it can thin the blood, and so some doctors don't want you to be on omega-3s if you're on other blood thinner medications. again, but it's something that does help a lot with circulation. Again, if you're having brain fog, if you're having inflammation or pain or stiffness, Omega -3 is really helpful for that.

PIERCE: Right. Are there any other supplements that you recommend alongside the omegas and the berberines?

OELKE: Along with B vitamins, I often recommend magnesium. Magnesium is another mineral that's really helpful for reducing stress. It works on the muscles. So basically, magnesium actually helps enzymes react better in your body. It also helps B vitamins get absorbed better. So that's another supplement that I recommend to a lot of people. There are different kinds of magnesium out there. Magnesium citrate is really good for oxygenation. Magnesium glycinate is good for metabolism. So, if someone's diabetic or pre-diabetic, I usually recommend magnesium glycinate. It's more of a metabolism-type magnesium out there. You can get these different types. And some of them have combinations because magnesium aspartate is good for the muscles. So, if you have muscle pain, again, you may want a combination of different things and see what works for you. Some people say, be careful if you take certain kinds, it can cause diarrhea. You know, some people actually take it for that purpose, you know, sometimes actually. But it does help at night to sleep. You know, people take it at night. Some people take it with melatonin and B6 to help sleep because magnesium and B6 actually reduce GABA, which is a neurotransmitter that can cause stress. It's a high inhibitory neurotransmitter. And basically, when that's high, you sometimes have trouble sleeping also. So, magnesium and B6 together helps with that. So, magnesium and B complex are helpful for that.

PIERCE: I take magnesium to help me sleep, but it's not one of the two that you mentioned. I feel like it's magnesium threonate. That's not the DNA.

OELKE: Magnesium threonate? Yes, that's worked on more. That's one for the brain. It does help with the brain. It's a more expensive kind, but yes. But yes, it just, you know, it helps with the brain, the magnesium for the brain specifically. But yes, citrate's helpful for just like the oxygenation, getting more energy to the cells too. That's some people, but here's that one. That's one that can cause diarrhea. Magnesium oxide is the kind you usually find in regular stores. It's the cheapest kind. It can also cause diarrhea. So, you have to be careful how much you're taking.

PIERCE: Good to know. So really, it's more along the lines of supplements that help with dealing with insulin resistance versus pharmacological things we go get at the pharmacy.

OELKE: Right. I mean, like I said, it really isn't a medication for insulin resistance at this time officially. But I think supplements, if we can supplement what our bodies are getting, the nutrition that we're not getting, can actually help a lot with, you know, maybe even stopping some of the food cravings that we have. So, the reason we have these food cravings is we're not getting what we want. The more sugar we have, the more B vitamins we need. So, it's kind of interesting to understand that.

PIERCE: Right. That is when I started this insulin resistance journey, one of the first things that I was offered was a GLP-1 for the theory was if I lost the weight, then that would take care of the insulin resistance. However, I have really high cortisol levels, too. So, I don't know how well that would have

worked with really helping me with my insulin resistance. I just found it interesting that the first thing I was offered was a GLP-1. I didn't take it, but.

OELKE: Yes, that's interesting. There's kind of the quick fix trouble is when you get off of that, the weight goes back up because it just suppresses what's going on. I mean, again, to me, I'd be looking at like ashwagandha, magnesium, B vitamins, something that's going to give you the underlying nutritional energy that you need to balance even the cortisol levels because B vitamins can help with that too.

PIERCE: Absolutely. So as healthcare professionals, how can we better support patients with making these sustainable lifestyle changes?

OELKE: Basically, while I coach people, I find out what their challenges are in creating a healthy diet. You know, some people say, well, you like you said, you're going to go traveling, you know. So basically, if you, you know, when you eat while traveling, you want to go have fun and eat, you know, that kind of stuff. And you go out to eat, you want to go to someone's house, eat what they're having. But again, try to find out where they are and what they're willing to do. How important is it for them? I call it their why. Why do they want to be healthy? Do they want to prevent long-term diabetes? We want to prevent. Why do we want to do that? And then, you know, support them in knowing, having measurable results. So, if you have high triglycerides or, you know, high fasting blood sugar, I mean, one of the things I would like to get actually is one of those continuous glucose monitors just to see where it's at. You know, when does it go up and down? And we can't just get those anymore. I don't think. I haven't tried actually. Just to see, you know, what is, because I've had some problems with my blood sugar going down. I'd love to know where it's at, you know, that kind of thing and what makes it go up. But I think if we figure that out and we can actually find out what's causing us to be out of balance, we can make better decisions. So, when we have more measurable results and things that we are working on, we can see progress. And when you see progress, you can keep going in the right direction. So, I think that's really important.

PIERCE: I'm seeing more and more studies come out about insulin resistance. And actually today, we recorded this, I saw an article that was coming out about people who actually, we say that they're healthy because they are a healthy weight, but even they still had high insulin levels. They had insulin resistance according to the ratio that you had mentioned before with your triglycerides. And is it HDLs?

OELKE: HDL, yes, triglycerides over HDL. Yep, if you look at that, that's one of the major markers of insulin resistance. And yes, you can be thin, you know, you don't have to be heavy, but usually a lot of even the thin people are starting to gain weight in their abdomen. So, look at that. You know, they suggest to see where they're gaining weight. And I've had someone here last week that she said, I'm fine except for my belly fat. And I'm like, okay, you know, it's like she was, she was great. Yes, we know what that is.

PIERCE: Right. We know what that is.

OELKE: Mm-hmm. Right. Are you seeing any, like, advancements in the treatment of insulin resistance, or is it still really trial and error? I don't see, I've not really seen a whole lot of new things coming up. Basically, like I mentioned, continuous glucose monitors, helping people understand where they're at, know, what causes what's going to go up, being aware of what's going on. I think that's where we need to work on moving towards so that people can make better decisions and know what works for them

and, you know, what reduces their stress, the cortisol levels, you know, and their insulin resistance so they can reduce stress. So, finding ways of reducing stress, know, building up resilience in the body is really helpful.

PIERCE: Absolutely. Well, that wraps up our time for this episode in our series on insulin resistance. Through this series, Dr. Oelke has helped really shed some light on the fundamentals of insulin resistance, its pathophysiology, and the effective management strategies to help pull this back under control. Understanding and really managing insulin resistance, we know it can significantly improve patient outcomes in a lot of ways. So, I'm going to try to do a quick little recap of some of the things that I've learned today. We can prevent or delay the onset of type 2 diabetes, reducing the risk of complications that we know come from type 2 diabetes, such as cardiovascular disease, neuropathy, and nephropathy. Normalizing blood glucose levels and improving lipid profiles really enhances overall metabolic health and well-being. And managing insulin resistance can really reduce the need for medical interventions and hospitalizations. Early management can prevent complications like she mentioned with PCOS and certain cancers and cardiovascular diseases. And really, it's all about encouraging a healthy diet, physical activity, and stress management that is really what supports long-term health and wellbeing. And so, thank you so much, Dr. Oelke. It's always a pleasure to talk to you.

OELKE: Thank you, thank you for having me. I really appreciate you doing this series. Thank you.