Introduction to Cancer Nutrition

Well, Dr. Jockers is a such an honor and pleasure to have you on on this segment of our Cancer Summit. Thank you so much for joining me. Well, thanks so much, Michael.

I appreciate it. And, you know, this is such an important topic. And so I'm really glad you're putting out this, this great summit, this great content on it.

Well, one one of the biggest issues people are dealing with is obviously, you know, in regards to cancer, you know, what? What should we eat? You know what?

What can we do to, control how cancer behaves in our body through our food and, and, you know, then then we have the questions about, you know, glucose, insulin, you know, fats, protein.

I mean, what what can we do as an individual to maximize the impact of all the other therapies that we do? so talk to me a little bit about, you know, your, your overview of what that should look like.

And then we'll get into more of the details for sure. Well, there's many different ideas as far as you know, how cancer grows and develops. But, one of the emerging theories is the metabolic theory of cancer, and that cancer is a metabolic condition where we have too many growth signals taking place and not enough signals for healing and repair.

So we have a lot of what we call anabolic anabolic is growing.

Metabolic Theory of Cancer

You know, we probably have heard that term when we talk about anabolic steroids, right. Like that. Maybe bodybuilders seek to grow big muscles, right?

We have different hormones our body releases that are our signaling growth. And that's important as long as it's kept in balance with different hormones and different activities in our body that signal breakdown or what we call catabolic activity, there needs to be a good balance.

We don't want too much of of one and or the other. Right. And so they need to be kept in check and kept in balance. And our way of life today really accentuates or kind of really, pushes us into this high anabolic mode.

And that's because food is so prevalent. So throughout the history of mankind, we had to work hard to, to get food. And food wasn't, you know, we had trouble with food storage.

So we would go through periods of feasting and famine. So when we when food was there and we had it, we would eat as much as we could because we didn't have very good refrigeration.

Things would go bad quicker. and we never knew when our next meal was going to be so we fate, we feasted, we ate really well, but then we would go through periods of time where we didn't have much food, and so there were many days where we ate very little or nothing at all.

And that was very common for our ancestors in today's day. And age. We all have. You know, if you're listening to this interview, you've got a pantry probably full of a month's worth of food.

Most of us have plenty of access to food, and so we're constantly consuming food. And when we consume food, we signal these growth factors. Now, there are certain types of foods where we get a lot of growth signaling, okay.

And that's going to be your ultra processed foods. The more that we processed foods and add more sugar, you know, more chemicals to the food, the more we trigger these growth signals.

And so the main growth signals are going to be insulin. Insulin's job is to take sugar out of the bloodstream, put it into the cells right. So it lowers your blood glucose getting the glucose into the cell.

Insulin also stops our ability to burn fat. And when insulin's elevated in our bloodstream it stops our body's ability to undergo healing and repair. We call that autophagy.

and we'll come back to that, that that concept. Another growth signal is mTOR. Mammalian target of rapamycin. And so that can be triggered by high insulin, a high amount of calories that we're consuming, and also a lot of amino acids that we're producing.

And so again, all of these hormones phenomenal hormones, we need them. We just need to keep them in balance. And then another growth factor is insulin like growth factor one.

And so these are nutrient sensing pathways. And when we are continually consuming food throughout the day, like, you know, back in the 90s, you know, that when I was learning how to become, you know, when I was an athlete growing up in the 90s, they said, you know, eat six meals a day, right?

Eat from the time you wake up to the time you go to bed so you can stoke your metabolism. Right. And there's still people that teach this. And when we do that, we're constantly signaling these, these, these nutrient sensing pathways.

And we're constantly triggering growth right in our system. And we're not getting the balance of healing and repair. And so when we go periods of time actually without food and we cut down or even eliminate those processed foods, and we eat real whole foods that, you know, are rich in phytonutrients, fibers, good quality proteins, healthy fats.

And we can come back to all those diet diet principles. We're eating real foods. Those real foods trigger less of those, you know, they don't get the quite the, the, the huge trigger of these, nutrient sensing pathways.

And then they also provide satiety where we're satiated between meals. We have less cravings, we're consuming less food. Between meals, we're able to go longer periods of time without food.

Okay. And I you know, I'm a huge advocate of things like intermittent fasting. And obviously we'll touch on that. But when we do that, we we get we now allow our body to undergo periods of time where those nutrient sensing pathways go down.

Insulin goes down below a certain threshold, and when it goes down below that threshold, that triggers our innate intelligence to burn fat for fuel and to undergo deep cellular healing and repair.

And we think about cancer. Cancer is a process where we have a whole lot of senescent or dysfunctional organelles within a cell, particularly mitochondria, that are become damaged.

And normally that's that's normal part of metabolism. But we should be able to break down and repair the damage mitochondria when we're not able to do that now, we're not able to produce proper cellular energy.

We can't produce proper cellular energy. We can't detox the cell.

Fasting, Autophagy, and Apoptosis

Now the DNA becomes susceptible to oxidation, oxidative stress, DNA becomes damaged. And then if we can't get rid of that cell or repair that cell, the cell's going to replicate at some point.

Now we get more and more of these damaged cells, and they they continue to replicate. So our body's natural system of repairing the cell or eliminating the cell, we call that apoptosis.

So the two things are autophagy is where we repair the cell. Apoptosis is where we get rid of or it's called programed cell suicide where the cell actually eliminates itself.

When we're not able to undergo those, we end up building up all of these dysfunctional or what we call senescent or aged dysfunctional cells. And over time, that can lead to tumor growth or really any kind of chronic inflammatory disease process, associated with a buildup of these senescent style cells.

And so, so anyways, that's a that's, the overview there. So we really can hit it from a metabolic perspective and, and trigger, you know, get our body back into its natural rhythm of healing and repair.

Yeah. And we know, I mean, we we've looked up on cancer more in the past as a genetic dysfunction. Obviously, you know, genes play a huge role into it.

but it seems to be more of a symptom rather than the cause that there's other driving factors, like you're talking about the metabolic aspects. and I mean, I, I look up on our cells now compared to, you know, how we used to live, you know, hundreds of years ago that we're we're kind of like quarters of calories. Yeah.

We we all know what it looks like when you walk into a house of a hoarder. You know, you can't really move around. You can't really be effective in your product.

It's just a bunch of stuff everywhere, and you're not very effective. And so that that's kind of what happens in our body. Yeah. When we're not, allowing the body to kind of burn up the garbage and, and kind of clean things up, clean up the cells, get rid of, like the senescent cells that you're talking about, that, that are just kind of there and not really do doing much, but just signaling inflammatory, you know, signals for sure.

And if you are noticing symptoms, I mean, if you have lower energy, if you have brain fog, if you have chronic pain in your body, if you have, you know, skin issues, you know, whatever it is, that's a sign that you have a buildup of these senescent cells, right?

And senescent organelles within the cells, senescent mitochondria, because ultimately, the quality of your life is going to come down to the stress, resiliency and functionality of the mitochondria within our cells.

And so we want them to be extremely stressed, resilient, and really high functioning. And the only way we're going to be able to do that is undergoing periods of stress and then periods of, in a sense, rest and healing.

Right. And so fasting is this great concept, you know, where we actually stress the cells in our body, we stress the mitochondria. And so there's a level of discomfort that comes with it.

But that discomfort can make us stronger. Kind of like exercise right. We think about exercise. You know, if you were to, to go and, you know, workout and lift weights and, or, you know, run or whatever it is, if we were to test your blood right after that workout, your inflammatory markers would be really high, and you might, you know, you might look at that and think, well, that's not healthy for me.

But the great thing about it is that's a short term rise in these inflammatory markers. And then the body actually becomes more stress resilient. You actually increase what we call your endogenous antioxidant defense systems that protect your DNA, protect your mitochondria, that protect your system from oxidation.

Oxidation is like rusting from the inside out. We need these stress resilient and endogenous antioxidant defense systems, but we have to stress our body in order to develop them.

Well. Fasting is kind of similar, right? Just like exercise, you know, the dose is is what matters most, right? Because we can overtrain as well. And actually, you know, cause too much oxidation in our system.

You got to get the right dosage. That's why when you first start exercising, you know, you might be a little bit sore the next day. And you know, we say take it easy, you know, kind of start to start to get your body adapted and habituated to it.

Well, it's the same with intermittent fasting or, you know, any sort of fasting. You know, if you were to just go from eating six meals a day to trying to do a 3 or 5 day water fast, that's like going from, you know, sitting all day on a couch to trying to run, you know, A5K, ten K or a marathon, right?

It's possible, but it's not going to be fun or comfortable. And so intermittent fasting is kind of this great way we can start to compress our eating window, meaning that we're going to tighten the hours that we're eating.

So let's say, you know, let's say you're eating a 12 hours a day. So you you start eating at 7 a.m. and then you finish your dinner at 7 p.m.. Okay. We call that, you know, it's it's a simple fast, right.

And it's a fast overnight 7 p.m. to 7 a.m. the next day. So 12 hours you're eating, 12 hours you're fasting. I say that's the bare minimum, right? For everybody.

Everybody should be doing at least that where you're not eating right before you go to bed. Right. Waking up in the morning, eating right away. Okay. That's not a healthy strategy.

So 12 hours where you've got an eating window, 12 hours where you got a fasting window. Very, very simple. Okay. Then once you get used to that we start to tighten that eating window up.

So let's say you're eating in 10 hours or 8 hours. Probably the most common strategy that that most people out there that are practicing some sort of intermittent fasting or time restricted feeding or doing, is an eight hour eating window where they're eating their meals from, let's say, 10 a.m.

to 6 p.m. or 12 p.m. to 8 p.m. you know, in that same day, now you've got 16 hours where you're not consuming calories, eight hours where you are consuming calories.

So it's like a 2 to 1 ratio. I say the time between your first meal and your last meal of the day. We call that the building phase, right? Because we're taking in calories and nutrients, right?

And then the time between your last meal and your first meal, we call it the cleansing phase, right? So that's where your cells are cleansing and healing and repairing.

Now when do we need a lot of building. We need it when we're a child, right? We're growing really, really quickly okay. We also need it. You know, if you're a pregnant woman, you've got a baby developing in you.

You need a large, building window, okay? Or if you're like an extreme athlete or something along those lines, you're going to need a larger building window.

You're going to need to consume more calories. But most adults, most people that are in their adult phase, unless you're pregnant, need a larger cleansing window, then building window at least 2 to 1, at least a few times a week.

Right? And so obviously, if you're really underweight, you know, there's there's certain demographics, you know, very thin, lean, menstruating females who are also very active in exercising and, you know, have three kids in a career, right, that could be a tougher demographic to get to do, you know, a tight eating window.

But that's not really what we're talking about here. We're talking about in general people that, you know, are fearful of cancer, perhaps trying to prevent cancer or heal cancer.

And so we definitely need to have that tighter eating window. And even if we can get it into where we have a 3 to 1 cleansing, where we're eating our meals in like a six hour eating window, that's phenomenal.

Right? And that really allows a lot of time for the body to bring insulin down, right, trigger autophagy and apoptosis in an effective manner to eliminate senescent mitochondria and senescent cells.

In general, our body would prefer to repair a cell rather than eliminate a cell.

Intermittent Fasting and Eating Windows

Okay, so it's more energy conserving for the body to go in and say, okay, there's, you know, 800 damaged mitochondria that are not producing energy properly.

Let's repair these mitochondria. Let's break them down. Let's take the raw materials and let's actually create new stress resilient mitochondria and really get this cell producing energy that it needs so it can detox, heal effectively and really function optimally.

That's what our body prefers to do. However, some cells are so far gone, there's so much oxidation and damage there that it needs to trigger this apoptosis.

Is this the cellular apoptosis? Now the problem with too much cellular apoptosis is that it triggers more inflammation in the system. Right. So short term it can cause a little bit more symptoms okay.

Kind of what chemotherapy does basically. and so you know it's not the preferential way, but we got to get rid of these senescent cells. So it's worth, it's worth the collateral damage that takes place.

And so ultimately the more that we're able to get insulin under this certain threshold, now we don't want it there forever. Right. We actually need, in a sense, kind of this sort of feast, famine, cycling.

Right. We need periods of time where we're getting insulin up over that threshold, right, for short periods of time. Right. So if we're eating in a six hour window, okay.

Now we're, you know, getting insulin up a little bit. And ideally we're focusing on foods that are insulin friendly, meaning they're not causing a big, big jump in insulin.

Right. So those are going to be you know, your your phytonutrient rich fruits and vegetables. Okay. as well as good quality protein sources. So I recommend grass fed, organic pasture raised animal products, healthy fats like extra virgin high polyphenol, extra virgin olive oil, avocados, grass fed butter, eggs, pasture raised eggs or a healthy, healthy, fat source.

Coconut oil. Right. So those are going to be your healthy fat sources. And if you get good quality protein, healthy fats, and then lots of colors, that's what I always tell people.

Lots of colors in your meal. you know, you're going to get that obviously from the fruits and vegetables. Then you're going to have less of this insulin, reaction.

Right. So we always kind of try to watch, you know, sugars and starches in our diet. Keep those two, to a minimum. Some people, digest them better than others, you know, so you can look at, like, a continuous blood glucose monitor, or you could test your fasting insulin, your hemoglobin A1, see, and kind of look at, hey, you know, is my insulin high on a regular basis?

Like when I'm looking at bloodwork I want to see fasting insulin. So that means you're fasting for 12 to 14 hours before you go in for the bloodwork. So I just had my bloodwork done last week.

I finished my dinner the night before at 7 p.m. bloodwork is at like 930, something like that, in the morning. And so that's fasting blood work. And I want to make sure my insulin is under six. Right.

So usually it's going to be somewhere you're going to always have some insulin. It's usually somewhere between 1

and 6 is a is a good measurement right.

Mine's usually 3 or 4. So right in that perfect range if you're up over six it's a sign that you're probably taking a little bit too many carbohydrates.

Or maybe you're not moving your body enough or you got a lot of stress. You're not sleeping well. So we got to kind of look at that. If you're on a low carb diet, it's up over six.

You're probably stressed out. You're probably not sleeping well, right. You actually, in some cases might need a little bit more healthy carbs, right, to kind of reduce stress hormones in your system.

So there's different tweaks that we can take. But ultimately and you might need to tighten your eating window. Well, you know that's another factor. So ultimately though if you're see if you're getting your fasting insulin and it's under six on a regular basis between that 1 to 6 range, that's a sign your body is able to undergo fat burning and autophagy, which is really key.

So that's one of the best tests to look at. Okay. when we're looking at, you know, blood sugar and things like that. And people will say, well, my blood sugar is, you know, 98, right?

I don't really care about your fasting blood sugar that much. I care more about your fasting insulin. I mean, I do care about your fasting blood sugar, but only if you're insulin high, right?

If you're insulin high, then I look at then I take then I consider that fasting blood sugar, you know, more more significant. So that's what we want to look at there.

And you know, getting that compressed eating window is one of the best and easiest things you can do honestly to dramatically improve your overall healing ability and, lower your risk of developing cancer.

And so so you mentioned insulin, but then also like a C, I mean, where yeah. Where's where's the perfect number for A1. See in your mind. Yeah. Yeah. So a1 c hemoglobin a1 c basically what that means is glycated hemoglobin.

So what happens is when you have high blood sugar. So glucose we use it for energy. We need it because our brain or you know our brain can run off of ketones or glucose.

But it always needs some supply of glucose, at least 50 to 60% of its energy needs to come from glucose. So you're always going to have blood sugar. Now, the issue of blood sugar is that the glucose molecules will actually bind to proteins like hemoglobin, for example, and they'll damage the proteins.

And so when we're looking at hemoglobin, anyone see we're looking at what percentage of the hemoglobin which is the binding mineral or the binding protein.

I should say binds to iron in in our, in our blood. And so what percentage are damaged? Okay. I like to see it 5% or less. Right. 5.0 or less. Now you're not going to get a it's not going to be flagged on bloodwork until it's like up over 5.7, I believe.

and then, you know, they'll start to look at okay, this is like a pre-diabetic condition. and usually 6.5 up over 6.5 is diabetic. Right. So where they're looking at for diabetic, but I like to see it a lot lower.

Like if I see a 5.5, 5.6 I'm like, Now I always look at insulin. I want to make sure Insulin's in a good spot too. Right? But that's telling me that we're getting periods of time where blood sugars going going pretty high up, right?

So ideally we're getting that around 5.0 or under okay. And I don't care. You know I've seen like mine at times it's been like 4.5 right. Which is really low.

And like other doctors never see that. But I feel great. Right. I don't have hypoglycemia. Right. So my body's

actually very metabolically flexible. And that's really the key concept.

We want the body to be really good at burning glucose, but also really good at burning fat. See, there's times when we need to burn glucose for energy, right?

Like I said, we're always burning some level of glucose. But when we exercise. Right. And this is the great thing about burning glucose is we don't need oxygen.

And we can we can create energy very quickly from glucose. We just don't produce a lot of energy. So we need to burn a lot of it, and we end up with a lot of metabolic waste, okay.

And a lot of oxidation in the system. Some level of oxidation is fine because our body gets stronger, builds these endogenous antioxidant defense systems to protect the DNA mitochondria.

This is why exercise can be so beneficial. But if we're chronically in sugar burning mode, we're rusting our system from the inside out. So we also want the body to be really good at shifting back to burning fat for fuel.

And so when we're at rest or like, you know, you and I, just having a conversation here should be burning primarily fat when we're sleeping at night, we should be burning primarily fat with the vast majority of our cells in our body.

And that's when we burn fat. We produce a lot more cellular energy and a lot less metabolic waste. So it's cleaner energy. And that's really the goal there.

So we want to be good at burning glucose when we need to. Right. But for the most part we should be burning fat. We should be very good at switching back and forth a lot of people, because they're eating a lot of these ultra processed foods, because they're eating often throughout the day.

They're not moving their body very well. They're stressed out, not sleeping well. All those factors go into them being stuck in sugar burning mode and being really bad at burning fat for fuel.

I think the recent statistics said something like, over 90% of our population is metabolically inflexible and bad at burning fat for fuel. And when you're bad at burning fat for fuel, it's hard to go a longer period of time between meals because your body's not good at switching fuel source.

It needs a continual supply of glucose, and when the glucose starts to lower, you get cravings because your body can't switch into burning fat for fuel.

So fasting seems like torture because you're like, oh my gosh, if I go more than three four hours without a meal, I mean, I get really hangry, right? I just don't feel good.

And that's again, this, this sort of metabolic inflexibility. Now, the way to get over that is, I say start with three meals a day, okay, 12 hours, you know, fast overnight, three meals a day.

Make sure you've got at least 30g of good quality protein in each of those meals. Okay, roughly somewhere between 15 to 30g or so of fat in, in the meal.

Now, that's going to depend on how well you breakdown fat. Like, for me, I can do high amounts of fat in a meal. Feel great. Right? And I feel really satiated.

But some people, if they don't have a gallbladder, if they have very, very congested bile ducts in their liver, then if they consume even 20, 25g of fat.

So even if they're healthy, really healthy fat, they don't feel good, right? So what I found is that most people can do 15g without any issue. Right. So you might start there, especially if you've had your gallbladder taken out or you've had liver issues, or you haven't felt good when you've had higher amounts of fat.

So start with 15 or so. and then, you know, work your way up, build up. Because the more healthy fats you can consume and feel good in the meal, the more you're going to be really satiated. Right?

And it's going to help you burn fat for fuel. And then, of course, make sure you're consuming nutrient rich fruits and vegetables. Right. And so you get that in your meal, three, three meals during the day.

Right. No snacks in between okay. And then hydrate. Well between meals. Good hydration is key. In fact, a lot of times people are cravings because they're dehydrated or they're electrolyte deficient.

Blood Sugar, Insulin, and A1C

And so if you're eating real foods, okay, and salting them to taste with good quality salt, then you should have the minerals you need. In some cases, I'll have people put like a little bit of salt on their tongue.

Just a good like a Redmond's real salt or something like that, or a little bit in their water. Right. And drink that. But if you do that between meals, that should reduce stress.

You actually feel more energized, your brain will function better and you'll be able to go longer between meals. And that's key without feeling, you know, hangry and having the hypoglycemic, like effects and so you just start with that three meals and then you just slowly as you feel good with that compress that eating window.

So let's say you start at 7 a.m., you push it back to 8 a.m.. Okay. Then you can push it to 9 or 10 and right, even get it into, you know, that eight hour eating window or maybe even a six hour eating window.

And a lot of people notice that they actually feel good doing two meals a day. Right? And, you know, unless you're really trying to build build muscle or you just are not able to consume a lot of food in a meal, okay, which is which is the case for for some individuals especially, you know, if they've had congested bile ducts in their liver or gallbladder taken out, they just can't consume a big meal. Fine.

You know, you can do a 6 or 8 hour eating window and do three meals, right? Three smaller meals in that, that time frame. That's totally fine as well.

And there are some individuals, especially individuals that are maybe very overweight, that can even do great doing, like a one day, one meal a day, right?

For a period of time, as I've seen a lot of people have a lot of success with that. I mean, I've had a lot of people tell me that they felt like they tried everything to have a sustainable weight loss plan, and it wasn't until they went to one meal a day that they were able to drop the 50 pounds right, and feel great, get their hormones back in balance, have great energy.

So in some cases that can even be really, really helpful. There's a lot of different fasting strategies that, you know, that can be done with this. And actually, you know, we're talking about cancer.

So with chemotherapy, radiation, one of the very best things you can do is actually get metabolically flexible, right. The better you are at burning fat and also doing time restrictive eating, intermittent fasting, the less side effects you're going to have from the chemotherapy and radiation.

And if you have a if you're working with a doctor that likes a personalized approach, which I know in ecology is not always very common, but a personalized approach is where, hey, if somebody is metabolically flexible, their insulin is low, their hemoglobin A1, C looks good.

They're able to do, you know, a 16, 18, maybe a 24 hour fast on a regular basis. And that's not a big deal for them. That oncologist should be adjusting the chemotherapy and radiation because research has shown they need significantly less chemotherapy and radiation to get the desired effect.

Because the body's so metabolically flexible, the cancer cells take up, they consume more of the chemotherapy and radiation when it comes in, and the normal cells are protected like they don't.

They don't desire it, consume it. And they also have more protection in a sense. And so there's less side effects, less collateral damage, and a lower dose that's needed in order to get the desired effect.

And this is, you know, there's Doctor Thomas Seyfried at Boston College. He is really pioneering a lot of the research on this, and we call it the press pulse strategy for cancer.

You press, you metabolically stress the cancer cells through, an insulin friendly diet. Fasting. Okay. So the diet he uses is a calorie restricted diet that's high in fat.

I think the diet he uses is low in protein. low in in in overall calories. Right. certainly low. Very low in carbohydrates. So kind of your standard ketogenic style diet is what he's using.

And and then using fasting as well, and then using chemotherapy or radiation, some sort of oxidative therapy. So the press is where you metabolically stress the cancer cell and then the pulse is some sort of oxidative therapy.

So in the conventional round the oxidative therapies where they're oxidizing these cells hopefully trying to hit more of the cancer cells than normal cells, the the strategies they use are not, excuse me chemotherapy radiation are the two main ones.

in the natural health world, people use things like hyperbaric oxygen because oxygen is very healing and strengthening for normal cells. But cancer cells are anaerobic.

They use an anaerobic metabolism. They're stuck in glycolysis. They're not burning fat for fuel for the most part. And because of that, oxygen actually can be toxic for them and induce high oxidation and cell death.

When we flood the system and use the pressure to get the oxygen into the plasma and flooded into the cells with hyperbaric oxygen. Also other oxidative therapies would be like ozone therapy.

That's another common one that's used in the natural health world. IV, vitamin C, right. We know vitamin C could be strengthening for normal cells, but for cancer cells it's actually very, very damaging.

So that's the press pool strategy. And we know that whatever whatever oxidative therapy that's used, it's always going to be more effective. And come with less side effects when the cancer cells are metabolically pressed because, you know, you're using the right nutrition principles.

So with the press polls, I mean, so you're the press, you're starving the cancer cells. But what what are you doing down during the polls is that when you're fasting or are you eating and eating in a different way than during the the the press compile.

Yeah. So the press is is the nutrition principles I talked about. Right. Intermittent fasting insulin friendly diet. That is the press that's going to metabolically stress the cancer cells because again, the cancer cells need a continual supply of glucose.

And they have a lot more insulin receptors somewhere between 10 to 50, maybe even some cancer cells have 100 times more insulin receptors than normal cells.

So they are really good at gobbling up glucose and nutrients that are coming into the bloodstream. And that's what insulin does. And so they're really, really good at that.

And so as long as blood sugars elevated insulin is elevated, they're going to be in a really healthy state. Okay. Whereas when insulin goes down blood sugar goes down right into a good balanced state.

now they need more resources, right? They need glucose. Continual supply of glucose in order to produce glutathione ion so they can protect themselves from the chemotherapy.

When they don't have that now, they're more vulnerable to whatever the oxygen therapy. So the press is the metabolically stress is metabolically stressing them.

The pulse is the actual oxidative therapy. So that's when you blast them with the, you know, the chemo or the radiation, the hyperbaric oxygen IB vitamin C, that's the pulse.

So you weaken them first and then you're pulsing them. Now depending on, you know, a strategy you want to take. I know there's research, for example.

Metabolic Flexibility and Meal Structure

let's see, there was a 2016 study that they looked at a group of people that were doing a 24 hour fast 48 and 72 hour fast before they did chemotherapy, and they found that with each fast.

And then they compared it to a control group. All of them had lower inflammatory markers, lower levels of overall DNA damage than the control group. And then the longer the fast, the lower the inflammatory markers, the lower the amount of DNA damage, meaning that there was less normal cells that were damaged and all of them noticed a lot less side effects right from the chemotherapy and radiation.

Another 2018 study, they did a 60 hour protocol, which is this is actually what I know doctor nation winners will have people do something along these lines.

like a 36 hour fast before they do any sort of oxidative therapy like radiation, chemo, right, or whatever it is. And it depends on your protocol. Right.

Because a lot of people are just getting one, you know, one big day a week, right? In a sense. Right. And this is this is where you can do something like this.

Six 2030 six hour fast before and then 24 hour fast after getting it done. Right. And it showed a significant improvement. for those individuals, they need a lot lower dosages.

and, had a lot less side effects. And, you know, they were able to be more effective, right, with the approach. So that's a great strategy, you know, and, depending on the dosage, because some people are getting these oxidative therapies multiple times a week and that can be more difficult to obviously, be doing, fasting strategies quite like that.

But at a minimum, you want a fast roughly 13, 14 hours before getting treatment. Okay. And roughly, you know, if you can do 4 to 6 hours after treatment, that's great as well.

Right? So that's just going to allow that treatment to be more effective. and from what I my experience with all the patients that I work with, I mean, I see they deal with less nausea, they deal with less side effects.

the the energy dip is not as much. And, and a lot of people may not even need, you know, like the steroids that they usually do in combination with the, with the chemo, you know, just because they can handle it better, you know, when, when they use that strategy.

so, let's look also, I mean, you have also people you talked about hyperbaric like, you know, vitamin C, these are the oxidative therapies. so how would you incorporate, you know, this kind of, whole strategy, you know, with chemo, we, you know, we do that maybe every other week or every third week, you know, depending on, the, the, schedule that you're on.

But the other therapies like vitamin C, you might be doing like three times a week or, you know, so you may be

doing some of these therapies, you know, quite regularly.

So how do you, how do you adjust your diet around those type of oxidative therapies? So you just kind of stay in that metabolically flexible state, or do you do some fasting strategies?

to kind of put even more stress, on the cancer cells during those type of therapies? Yeah, this is a great question. So first thing we got to realize is that conventional medicine, like chemotherapy radiation has a lot more research than natural therapies, right?

A lot more research. And that's why, you know, it's considered the gold standard. However, we also know that has a lot of side effects, right? The natural strategies I. V.

vitamin C, hyperbaric oxygen, ozone okay. A lot less research, however a lot less side effects. Okay. Most people have almost no side effects from taking those.

So they're very, very safe from what we understand about them at this point. Okay. We just don't have a whole lot of research showing, you know, how they affect each type of tumor.

And that's why they're not the gold standard okay. Chemotherapy, radiation, lots of research. We know that's the gold standard but comes with the side effects.

And so the fast strategy's even more important with the, chemotherapy and radiation okay. With the I. V. vitamin C. the hyperbaric oxygen, if you're not metabolically flexible, they're not going to be as effective.

Right. But you're not going to have you're you're still going to have such a low level of side effects that it's not necessarily dangerous. Okay. Whereas with the hyperbaric I. V.

vitamin C, if you're in a metabolically flexible state, you're going to get even better results. Now, do you need to do an advanced, you know, long, fast to get results with that?

Not necessarily. I mean, if you are overweight and you're really trying to improve your metabolic health, I would recommend that, you know, one issue you always deal with with cancer patients is there's a certain percentage that, you know, are wasting away. Right?

So they are they have they're dealing with a lot of sarcopenia, losing a lot of muscle mass in their bodies, wasting away. So we have to be careful about fasting with some of those individuals.

But, you know, depending on how, I guess, how aggressively you want to improve your overall metabolic health in a safe way, you can apply, you know, a calorie restricted or fasting, you know, just doing a longer fast, three five day fast or fasting mimicking diet like prolonged puts out where you're consuming calories, but you're consuming them in a certain ratio.

you know, they give you all these boxes. And the research has shown that you can eat, you can eat these, these foods. Right. And you follow their program to the T, and you're not going to trigger the nutrient sensing pathways because the overall, carbohydrate levels, the protein levels and the overall calorie load is going to be is going to not trigger these, you know, the all those different nutrient sensing pathways enough to get an over a threshold to where you are not able to undergo autophagy.

And so it's like a five day eating plan. So that can also be helpful, you know, for for different individuals as well. and I you know, I encourage it I encourage it.

And it really just depends on what the individual is, is motivated to do. Right. Because you want compliance, right? What they what they can be compliant and what their overall goals are.

Right. But absolutely combining, you know, getting metabolically healthy, I think is a prerequisite that everybody

needs to have when it comes to any sort of any sort of health condition and really just optimizing their overall health and life.

And then the level of aggressiveness they want to go into with when it comes to, intermittent fasting. You know, our extended fast is going to be personalized for the individual.

Yeah, we all know how, yeah. So so if we can put the cancer cells in that kind of weakened state, you know, and obviously, like you mentioned, if we if we reduce the the growth signaling that's taking place and that's and looking at you mentioned mTOR, IGF one, insulin, you know, all these different things.

So if we're able to bring those levels down, which are there to stimulate the growth of the cancer, and then at the same time, you know, support the breakdown, which is the autophagy that you're talking about.

If if, these cells are not getting the nourishment that they need, which is glucose, then all of a sudden they starve and then then they're easy to kill with oxidative therapy.

And then we can they use autophagy to kind of clean that junk up, you know, clean up the the dead cancer materials. Because one of the issues is that, you know, you, you, you blasted cancer cells and you, you know, have all these cancer debris in your body.

Would like chemo, radiation. And then all of a sudden you still have the the insulin signaling. The IGF mTOR is still signaling very high. So then the body the cancer is just bringing these different components, these these kind of debris from the cancer cells and then building new cancers elsewhere.

Yeah. So so that's absolutely important. Absolutely. Yeah. And two things I want to add to that. This is also why you need to make sure that your drainage pathways are open lymphatic movement right.

Massage rebounding movement in general going out and walking like if you've had chemo or radiation, you might feel tired. But go out, take a little walk. Right.

that just that movement alone. Make sure hydrating. Well, you want to get all those drainage pathways open up because you do have all these cancer debris that you want to sweep out.

You want to pump out, poop them out, sweat them out. So if you get a sauna right, breathe them out. So that's how we eliminate these kinds of toxins. And so super important to do.

And then the other big thing is this is that mTOR, which which is million target or rapamycin kind of gets a bad rap in my opinion. And the reason why is that I think it's oftentimes, it's overly associated with accelerated aging.

And it can be an issue for sure. And one of the main triggers for mTOR is protein. But the thing about it is that when mTOR gets way out of balance is when we're eating protein all day long.

And the great thing is, like I was talking about for I recommend a higher protein diet because I find that the protein is really satiating. It helps us burn fat for fuel, and it helps us build lean body tissue, which is so important.

Good bone and muscle tissue. Super important there. But when you're doing it ideally in a condensed eating window, that's the key. If you're doing it from the moment you wake up to the moment you go to bed.

Press-Pulse Cancer Strategy

Now we got this really wide eating window. Now we're going to over stimulate that mTOR pathway, which is what bodybuilders are trying to do, right? That's why they do it.

bodybuilders are trying to build as much lean body tissue as possible, but they're also affecting. That's not a healthy no. Bodybuilders say this is healthy, right.

The way that they eat. And so, we want to stimulate mTOR. But in this sort of path in this sort of condensed eating window. So we're also able to lower it for an extended period of time.

So we get the healing and repair, because mTOR is going to inhibit autophagy, not allow us to undergo autophagy. That's why it can be problematic for a long period of time.

But in a short period of time, let's say a six hour eating window, eight hour eating window can be very helpful because we're helping support our own natural lean body tissue.

Yeah, yeah. And so talk me through kind of what what you envision would be the best type of diet. I mean if you yeah, you know, if somebody is going to kind of have a goal that this is what I want to reach, you know what what what should that look like?

Yeah. In general, when it comes to diet principles, I always say there's three main rules. Number one, reduce sugar and grains okay. Any sort of processed sugars, grains, even if it's, you know, rice and things like that really very little nutrients and grains and they're very, they're very low genic, meaning they, they really cause a big increase in insulin.

So we don't want that reduced sugars and grains. Number two is get rid of all of our bad processed oils, seed oils, you know, any sort of seed oil that's going to be canola oil, corn oil, safflower oil, cottonseed oil, peanut oil, soybean oil.

Get rid of that and then add in healthy fats. It's going to be your avocados, your extra virgin olive oil, grass fed butter. You know, things that I was talking about before, coconut fats.

So you want that. And then we want to make sure that we are doing everything we can to reduce toxins in our diet. So minimal toxins, maximal nutrients okay.

So when it comes to like animal products, for example, we want to get as organic as possible grass fed pasture raised. The conventional is going to have a lot more antibiotics, hormones that are put in there.

They're the animals are eating pesticide and herbicide, laden grains. Right. And so they're bio accumulating all these toxins. So really important especially with animal products.

We're trying to get organic grass fed as much as possible, pasture raised wild caught seafood. And then, you know, the environmental working group has a list of like the Dirty Dozen and the clean 15 when it comes to produce basically the general rule is anything you're going to eat that outer layer like a strawberry, right?

Or celery or something like that is going to have more pesticides and herbicides if you get it conventional. So you definitely want to go organic with that.

Anything that you're not going to, you're going to peel the outer layer like an avocado or an onion is going to have less pesticides or herbicides, therefore less important to get organic. So go organic as much as possible.

But if you want to find out, hey, what areas are better that I can, you know, whatever is going to get away with more not getting organic go to the environmental working group and they've got the clean 15 dirty dozen.

Again, general rule is you're going to eat the outer layer, get it organic. You're not not as important to get it organic. So that's what we want to do right there.

And then like I said we want to you know I always recommend prioritizing protein. So when you're thinking about macronutrients it's probably the most important macronutrient to look at.

And most people are not consuming enough protein. And that's causing them to have cravings after their meal later in the day and eat more processed foods.

So I recommend 30 and depending on who you are right and your health goals, maybe even up to, you know, 50 or 60g of protein, like for me, I, I, I lift weights all the time, right?

So, I usually eat two meals a day and my meals, I'll have 80g of protein in a meal. Right. But I eat it in like a six hour eating window. and so you can go more than 30g.

But I find that most people about 30g. Now if you're under, that's for the average 150 pound person. If you're under 150 pounds, they'll say you're 125, okay, you 25g of protein is probably fine.

If you're under 100g or 100 pounds, 20g of protein is is fine. Right. So but if 150 pound person. Right, typically we're looking at 30g of protein. That's a minimum to stimulate what we call our leucine threshold.

Leucine is our branch chain amino acid. That is the most important amino acid when it comes to signaling muscle protein synthesis, the development of muscle tissue and most protein sources are roughly 10% leucine.

And for a 150 pound individual, they need about three grams of leucine in a meal to trigger that muscle protein synthesis. That's where you come up with that number of 30g of protein in the meal.

Again, if you're lighter, it can be less. Okay. and so that's what we're looking at with that. And then we want to obviously add in the healthy fats like we talked about up until, you know, the level that we're able to comfortably tolerate.

And then lots of, you know, fiber rich, phytonutrient rich fruits and vegetables. So I recommend getting a lot of colors, like, you know, my my dinner last night, I had a mediterranean salad where we had, cucumbers, tomatoes, hearts of palm, black olives in there and, let's see.

Yeah. And then we have feta cheese in it. And then I had high polyphenol, fresh pressed extra virgin olive oil. One of the best things you could spend money on when it comes to food, it's more expensive.

But get a really high quality olive oil and use some of that every single day. The olio candles, the hydroxy tyrosine, these powerful polyphenols in there, in fact, Olio Cantos has been studied, been shown, you know, in vivo to really be powerful and powerfully effective against cancer cell growth.

Right. and they call it nature's ibuprofen, right. Because it's so powerful at down regulating inflammatory pathways. So I put that on there. I put, lime juice on it.

And then, like a herb mix that I put in there and I salt, garlic, basil, oregano, you know, all that kind of stuff and some parsley that I put in there.

Right. So that's Mediterranean salad. Okay. I cooked up a bunch of, grass fed beef burgers. Okay. And then I also diced up some onion and bell peppers.

Okay. And I sauteed them right in grass fed butter. Right. And that was. And so we had tons of colors in that meal. Right. Lots of healthy fats, good quality healthy protein.

Okay. Tasted wonderful. And, you know, it was it was great. Right. And so that's kind of an example of a really good healthy, healthy meal. You want a lot of colors in it.

Make sure you're getting your protein. So find out how much protein like how much of this burger, how much of, you know, whatever protein source is you need to get your protein threshold like we talked about, right, 30g or 25, whatever it is.

Right. And then just, you know, layer in the fats in there and, you know, the colors.

Diet Principles and Hydration

The only other thing would be, you know, if you have your gallbladder taken out or if you don't feel good when you consume a larger amount of fat, then just be very aware of, like how much fat is going into that meal.

So you can tailor it so you feel good and are able to digest it well, yeah. And you can add, you know, bitters, bile salts. Yeah. Not a different strategy you can do to and I support bile production and bile flow, you know, because a lot of time to get gets sticky and and doesn't flow very well.

So you know bringing them beats sometimes. Yeah. So all these different strategies, in regards to water, I mean, because you, you mentioned kind of the importance of water to kind of flush out the toxins.

I mean, so what what would be kind of a quantity. Yeah. We we always hear, you know, half your weight and. Yeah. And, and ounces is, is that kind of the strategy or what are your thoughts.

I mean I would say half your body weight ounces has a minimum okay. So if you're somebody that just doesn't have a whole lot of thirst, doesn't need quite as much, maybe you're not you're not exercising regularly, things like that.

Then half your body weight in ounces as a minimum. Okay. But you can definitely drink more than that. Drink up to your comfort level, you know, have to force the hydration if you're already drinking that.

but drink up to your comfort level. I personally, I consume a ton of water, right? I consume easily a gallon of water a day. Make sure you're getting you've got some sort of good water filtration system, ideally in your home, like reverse osmosis or distilled water.

and if you can afford it, hydrogen water that that's already filtered, right. Already has a reverse osmosis system. So you get all the toxins and the debris out of there.

And molecular hydrogen has been shown to be just really powerful as far as, improving antioxidant status in your system, many great health benefits to it.

So if you can afford that, that would be a wonderful system. But at the bare minimum, making sure that you've got like, distilled water or, reverse osmosis, you know, those are becoming more and more affordable.

So getting something like that, you can get portable ones if you live in an apartment, that you can put in. So those would be really great. When I live in an apartment, when I was in graduate school, I was one of the best investments I made was getting a, reverse osmosis.

I think I paid three, 300 bucks or so and then paid a plumber to put it in because I don't know what I'm doing. So, but that was one of the best investments, right?

And, you know, just getting that really good clean water. I want to buy water. You know, when you go in, you have to buy water all the time. You're also getting it in plastic typically, which has got all these different types of chemicals that are carcinogenic.

So you want to be drinking out of glass cups or stainless steel if you if it's like traveling or something like that. The only time I ever buy water, I don't even buy it at restaurants.

My wife and I, we bring our own water, in a glass, you know, we get like, like a kombucha or a Kavita bottle that's in glass, right? We reuse those, okay?

And we just keep cleaning it, and we bring that with us to the restaurant, because I don't want their water, and I don't want a bottle of water. Right. Because it's got the plastic.

The only time I ever drink bottled water really is, is if I'm flying somewhere. so you want to keep plastic and other, you know, environmental toxins to a minimum, and that's a great way to do it.

And, it will save you a lot of money in the long term. So, so get some sort of good water filtration system, hydrate your body. Well, super key. Yeah, yeah.

So kind of to, to sum up then, so to eat, eat in a way we want to be metabolically flexible, you know. So we want to eat in a way so the body can burn, burn sugar, burn fat from protein can kind of and we know that cancer cells are not as metabolically flexible.

So when we do it that way then they don't thrive. And we also want to kind of reduce the IGF for the growth stimulating hormones like IGF, mTOR, insulin, etc..

and then, you know, support apoptosis to clean out senescent cells, to clean out, you know, old mitochondria that is not working as well, clean out, old, you know, blood cells, white blood cells that are not working as well.

We want to kind of clean all of that out and to use the fasting strategies, intermittent fasting, eating, metabolically flexible. We achieve those goals.

Yep. Absolutely. Yep. That's what you got. That's what you want to do. Yeah. And so without intermittent fasting, if you're not condensing that eating window then you really have to keep protein down.

Otherwise you're going to overstimulate the mTOR. Especially if you're somebody that's out there that's trying to heal from cancer. And I just don't find that to be as effective.

personally, I don't think that it's as comfortable a diet. And, and it's not as good for muscle mass and supporting muscle mass. So this is where intermittent fasting comes in. Really?

Well, I think that when you're eating your meals, you get that protein level up, you're going to feel better. You're going to be more satiated, less cravings, a diet's going to be easier to follow.

And, you know, and then you're getting the mTOR suppression that you need while you're having this kind of longer fasting window. So that's super key.

I love it. Well, thank you so much, David. I really appreciate this time. And for all you do, you know, for the world bringing this message out because it is so important.

I mean, we we've kind of moved into society where we are just stimulating these, you know, the how we're eating, you know, our insulin receptors, our IGF one.

I mean, all of that gets bombarded all the time. And we're just yeah, growing out of proportion so to say. So yeah I appreciate everything that you're doing.

So thank you. Well thank you Michael. Appreciate you and honor to be on your summit here. Thank you.