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SUMMIT

Dr. Pawluk: This is Dr. Pawluk. I have the pleasure today of being joined with Dr. Cheng Ruan. I hope I said that right, Ruan. and Dr. Ruan is a functional medicine doctor and is a man of all trades, he does all sorts of things. We had a wonderful discussion before we started, but there're many things that he does on the operation that he has. So I'm not gonna say much about him because I think he needs to explain himself but basically let the topic of today's pain solution summit session is about the effects of fasting on immunity, inflammation, and pain. So, Dr. Ruan, without taking any further time from you, let's proceed.

Dr. Ruan: Wonderful. Thank you so much for the fabulous introduction. A little bit about myself. So I'm board certified internal medicine physician here in Houston, Texas, founded a Texas center for lifestyle medicine back in 2017 and we've been working within insurance and government insurance and, in military models on creating lasting change in healthcare using the concept of innovative health. And so, you know, over the last couple of years, there's been an obsession looking at chronic pain, especially here in Texas where there's major, a lot more restrictions now than there were back two years ago from the Texas medical board are narcotic prescriptions. And so every physician here is looking for some sort of alternative to really affect, you know, chronic pain. And so, you know, I like to tell my people that my expertise is looking for solutions that are either low cost or free, such as like mindfulness and meditation, fasting, calorie restrictions and stuff like that.

Dr. Ruan: To see if there's an impact on not just chronic pain, but chronic depression and sleep and stuff like that. And so what we really discovered was that there's a huge implication of chronic pain. Let's just start talking about the people who are obese. I think if we understand the obesity model of chronic pain, then we really understand how we should be focusing on things. I think for those people who are obese, and if you just look at the veterans population who we work a lot with. Veterans with BMI's of 30 and over, body mass index 30 and have a four to five times more likely to have chronic pain complaints and their chronic pain levels are significantly higher in that population.

Dr. Ruan: And so it's not necessarily, it's just obesity component is that there's a lot of components that are associated with it, just because there's association doesn't mean there's a causality and I think we can divide it into different components. I think the first component of obesity is just mechanical, all right. And so what I mean by mechanical, so my mom is an acupuncturist and herbal specialist so a lot of what she does is mechanical. Looking at the mechanics of people who aren't moving very much. So there's a fascial constraints and the Myofascial constraints. There's movement in general and there is the weight of movement isis that mechanical structure doesn't owe towards much higher levels of pain and chronic pain. So that's a real obvious thing.

What's not obvious is some of the chemical related structures that are associated with obesity.

Dr. Ruan: So those people with high adipose cells they have higher cytokine activation. So Cytokines are basically things that are elevated when there's inflammation and these cytokines can actually create the sensation of pain. So chronic inflammation, chronic pain just by having more of these adipocytes or fat cells that are in the body and of course, so there's mechanical there's these adipocytes and that also contributes to a hormonal and so we know that there's different hormones and different neuro hormones that are associated with not just obesity but being sedentary. And usually they go hand in hand as well and these particular hormones actually sensitize people to the perception of chronic pain, not acute pain, but chronic pain very interestingly. And so understanding these components and understanding that there's an entire lifestyle component to it that's associated with the obese population.

Dr. Ruan: We can understand why chronic pain is a bigger issue in this population but this population is also getting more and more engaged. As you know, right now we're in 2020, we're far more engaged in trying to find these solutions rather than being on prescriptions which is exactly why we've been talking in the first place. Correct?

Dr. Pawluk: Correct. I should also mention that I didn't get in the introduction you could talk about this yourself but you actually wrote a book called "The Ultimate Guide for Type Two Diabetes Reversal".

New Speaker: I did. Yeah, and so I wrote that book with one of my friends who's a dietician. We're actually releasing the second version now but that was written back in 2014 and the concept behind that book was that we have to create a way for people to have a categorization process that's far more robust than just the food pyramid or the food circle.

Dr. Ruan: Right? and so we put a lot of value into plant based nutrients, farro nutrients, a lot of value into different categories of food and we ended up with six categories of food and the reason we did that is that between 2013 and 2014 we actually enrolled about 600 diabetics into the program. 591 actually completed the study and we were able to find that people were getting the blood sugars regulated are much more readily and we actually eventually took 117 people who are type two diabetics on insulin, off in insulin with an average number of days off insulins at 7.5 days. And believe it or not their pain scores improved as well. So that was a really interesting thing to see and we know that even in diabetics injecting insulin exogenously that insulin can propel a inflammatory and pain modulating process and they can have a higher perception of pain just by injecting insulin.

Dr. Ruan: which is really really apparent because when people were like the day they get off of it their body feels better. They feel lighter, they're more mobile and there's a whole lot of hormonal components as to why that's happening and so at that time when we wrote the book, I didn't include the concept of fasting instead I put, just because I didn't know any better at the time. And so right after that book was written, I followed the research of Dr. Valter Longo, who created the fasting mimicking diet and he had all sorts of research on different types of fasting and longevity and our new version actually includes intermittent and prolonged fasts as part of the regimen but if you look at the data of fasting it's very surprising because you know going through. As I went through some of this data and I was just kind of shocked at how simple fasting can or how easy fasting can mitigate some of these processes.

Dr. Ruan: So if we look at, for example, like the root causes of chronic pain, you have inflammatory pain, you have neuropathic pain, sometimes you have a mitochondrial destruction or dysfunction which can cause stability and pain. It could be psychogenic and it could be a purely a structural type of pain, like a bone, soft tissue muscle, et cetera. And so if you actually look at fasting, fasting deals more with inflammatory pain and neuropathic pain,which is more common than any other causes of chronic pain than anything else and the mechanism was actually very surprising. And so if we look at fasting and inflammation, let's say, so there was a study that was done back in 2001 which doesn't seem like a long time ago as well, I guess it is now that we're in 2020. If you look at that, that it's a rheumatoid arthritis study and actually showed that they did a 7 to 10 day of water fast followed by a three and a half to four months of a vegetarian diet and they had dramatically improved inflammatory markers as well as pain scores.

Dr. Ruan: But when they went back to their normal diet, inflammation actually return after that three and a half months. So the question is, is why, you know, why did that really happen? Is it the type of diet they were eating? Well, as it turns out, we know that high energy diets in general in mice model and this is done on a study that was done in 2013, high energy diets can induce a mechanical pain hypersensitivity in mice, and they actually looked at the biopsies and found out that high energy diets can produce severe damage to the long myelinated nerve fibers. So what that means in plain English means that we know that these high energy, high caloric diets can produce damage to the covering of these nerve cells that's supposed to promote the conduction of the nerve, the health of nerve.

Dr. Ruan: And there's actually severe damage to the really long nerves that are there and not only are the long nerves damaged, the smaller ones, a small myelinated fibers also had damage, but it's not as severe as the long nerve fibers. So either way, there's nerve damage that's caused by high energy diets in the mice model. So maybe that's why the previous previous model in a previous study in 2001 show that people were having a lot

of chronic pain, inflammation back after they resume quote unquote normal diet but there's another mechanism and it's sugar. And you know, it's not surprising that sugar causes inflammation. Right? And we've known this for a long time. The most interesting study that I've seen on sugar is actually on post ischemic pain so basically post ischemic means that people can develop pain after they lose blood supply to an area of the body.

Dr. Ruan: And then when they get blood flow into again called reperfusion there's inflammatory markers in there that causes the pain to be dramatically worse and we know based on multiple studies that sugar significantly worsens this post ischemic pain that's there. There is actually a pain sensitization mechanism that happens in the brain with hyperglycemia or high blood sugars and so that may be another mechanism why that 2001 study showed that people were having about the rheumatoid arthritis study showing that people were having these chronic pain issues come back after resuming a normal diet. Of course, we're only assuming that a normal diet generally means higher in sugar and in calories in high energy diet in general. And so I think those are three studies that were very very interesting to me.

Dr. Pawluk: I think, are you talking about reperfusion so if people understand that when you block a blood vessel suddenly putting a tourniquet over your arm for the right amount of time you can stop the blood flow to the rest of your arm below that level. But you could have chronic perfusion problems as well. Right? So the most research that I've read as well talks about acute perfusion reperfusion. If you have a heart attack, you have a perfusion injury, the blood supply is disrupted, the tool to the rest of the heart. When you unblock it then you have a reperfusion injury. So you actually injure the heart again, when you're reperfused unless you take steps to help the heart deal with other body deal with that increased blood supply to that area that was deprived before. So what happens in the case of chronic perfusion injury? Are there similar mechanisms?

Dr. Ruan: Actually that study was studying chronic reperfusion injury. So, well there were two studies. There was one that was at what's called a hindlimb ischemia, where they clamped off the mice arteries in the back leg and so we know that a hyperglycemia worsens that injury, but there was another study actually done by the same group that actually shown that these chronic ischemia also had the similar effects as well and so I guess it's not surprising that, you know, sugar causes inflammation. That's something that I think it' globally accepted but we have a pretty good idea as to some of the mechanisms as to why that's happening but going back into the whole idea behind fasting, so there's two concepts to fasting. So, you know, first of all, I'm gonna have to find there's a difference between fasting and starvation.

Dr. Ruan: Fasting is a voluntary withdrawal of caloric content for specific purpose and starvation is involuntary. So involuntary means you don't have access to food and so what we're

talking about is voluntary withdrawal. So as it turns out that short bursts of the sensation of hunger attenuates inflammatory type of pain and this is controlled by an area of the brain expressing this protein called the HGRP, Aguoti related protein or Aguoti related peptide. And this area of the brain can can actually block the pain receptors and they see that the sensation of hunger can actually trigger this response and then this is talking about chronic pain. It's not acute pain, acute pain. The sensation of hunger either does nothing or it makes it worse. My daughter calls it hangry.

Dr. Ruan: So this is talking about intermittent episodes of hunger and chronic pain and also with hunger also is mediated by neuropeptide Y and we know that alone as a antinociceptive effects in the brain as well that's controlled in the high brain and the pear breaking nucleus. So the long story short, what it means is that the brain has a mechanism where chronic pain has switches that can be potentially turned off due to pain and inflammation that can be expressed when there's a sensation of hunger that comes along. So, you know, fasting and hunger maybe two different things, but the initial phase of that fasting is the hunger response.

Dr. Pawluk: So hunger in a sense acts as a counter irritant. It's another irritation to the body, which then takes over something else. So for example, electrical stimulation of nerves, blocks, pain receptors going up the spinal cord and I call that an antignosis septic. It kills the pain from something else that's causing pain. So in other words, it's a distractor, it's a power irritant.

Dr. Ruan: Yeah, no, that's a great way to put it. Thank you for that. Yeah.

Dr. Pawluk: All right. You don't have to, I'll have to take you know, recognition.

Dr. Ruan: Yeah. And so whenever we see these things, you know of course there's, there's animal studies and there's human studies and whatnot. And I think we need a practical applications to the listeners out there of exactly what to do and so, you know, I guess that brings to the question is, is there really the best type of fasting, whether it's intermittent fasting, prolonged fast, 24 to 48 hour fast, versus a something called 5 2 fast. So, you know, the fasting is, it can be beneficial as long as you do it. I think we really have to individualize the approach of, of how it really works but I say that with an exception. So we know that studies that are done on intermittent fasting, generally most people think of intermittent fasting as fasting for 16 hours of the day and eating during the eight hour window, doesn't necessarily produce a longevity effect, if you will.

Dr. Ruan: but what we know is that if that eating window is during the daytime, when there's sunlight outside then it can produce longevity effect. And so we call that type of fasting a circadian rhythm fasting. Second most common type of fasting that I should tell our

patients to do is a circadian rhythm fast. We know that the circadian rhythm, which is a mechanism in our body, in our brain that controls the day-night cycle. Our circadian rhythm control all our hormone balance. The controls are neuropeptides and close our neurotransmitters, our brain, our gut our immune system that pretty much controls everything. And after sundown we're supposed to go into this period of healing, but you know, it's 2020 and there's things that can inhibit that feeling. The healing, computers, phones, stimulation of high Kelvin temperatures in the eyes that can inhibit this sort of healing response that's propagated by melatonin.

Dr. Ruan: And so things like that can worsen the chronic pain as well. So multiple, multiple studies showing that impaired sleep and chronic pain go hand in hand. Specifically sleep apnea and sleep apnea is a huge deal, is heavily, heavily under-diagnosed. In fact, we're about to release some data in our clinic that most of the people who come in with dementia or dementia like features and memory loss, over 80% of them actually had either undiagnosed sleep apnea or untreated previously diagnosed sleep apnea, or intermittent use of any sort of oral device or C-PAP. So compliance issues. No, no. Actually less than 20% of them had BMI over 30. So less than 20% of them actually were obese. So most people think sleep apnea is someone with, you know, large neck and obese and storing and stuff like that.

Dr. Ruan: And that's not necessarily true because there's something called central sleep apnea, which is from up hear. The brain inhibits that brain response. Oxygen goes down at nighttime. There's no healing that occurs in nighttime. Your body and your brain goes into the fight or flight, your brain shuts off the energy production pathways. This shuts off memory creation pathways and upregulates neuropeptides that propagate inflammation and chronic pain. And so every person with chronic pain issues, especially in a lot of these military veterans coming in, we actually start with a sleep study and we're able to get the pain scores dramatically improved just by having the sleep apnea treated even for a very short period of time. So that's how important the sleep and the circadian rhythm response is for people. And if we are able to help just dominate the way we sleep, increases sleep quality, eating during the daylights, not having too much a visual stimulation at nighttime and having a good bedtime routine, we're able to get really, really far. We're chronic pain. And so that really empowers me to kind of share this with people because these are very simple tactics.

Dr. Pawluk: That's very good. So yeah, I would not expect it that, that would do that. Now sugar obviously not without being diabetic, causes inflammation in the body, which probably causes a lot of neuro inflammation. As you were saying, lead to central sleep apnea.

Dr. Ruan: Yeah, absolutely. And then, and then, you know, I spent this past weekend with, with 36 previous NFL players. And so, a lot of them I actually do think have undiagnosed sleep

apnea, not because they're large or anything like that. I think they may even have central sleep apnea, that is worsened with because of injuries and a lot of them do have orthopedic issues and chronic pain and being on chronic medications but they're always surprised to find when I say, Hey, we got to get your sleep, like controlled really well the C-PAP machines and whatnot and actually improves compliance and we know that, you know, sleep apnea or nighttime Hypoxia. So basically, at nighttime your oxygen's deprived. It stimulates a lot of cytokines or inflammation to be produced by your fat cells. So once again, obesity, sleep apnea, and if it's not by the fat cells it's by other tissue as well and they actually inhibits the liver and the guts will work properly as well.

Dr. Ruan: And so the liver is supposed to be, you're filtering organ and the gut is supposed to be a filtering organ as well. It's supposed to be in charge of this micronutrient absorption or nutrient absorption in general. And when the sleep is messed up, you can't do it very well. Why? Well, there's, there's inflammatory reasons. There's also blood flow reasons that your body's hypoxic or low oxygen at nighttime. A lot of the blood flow is diverted away from the guts or the mesenteric vessels into the fight or flight, skeleton muscles because your body, literally, things are dying and trying to get you out of sleep and have you breathe and healing cannot occur in chronic pain. It's such a bad issue in this population?

Dr. Pawluk: Well, we have not done enough to focus on sleep, so that's very useful information.

Dr. Ruan: Yeah, and I think we have multiple sleep questionnaires and we like to use the Epworth scale to qualify people to look at the sleep and sleep studies and stuff like that. But I do want to encourage everyone to think about sleep as an issue, especially with chronic pain. Even if you're skinny, even if you don't snore, those do not necessarily mean that you don't have sleep apnea. It just may mean that you don't have a component of obstructive sleep apnea. We can have central sleep apnea from the brain.

Dr. Pawluk: Again, much more common than we think. How does fasting relate to sleep apnea?

New Speaker: Oh yeah. Very good question. So we have a, that's one of the most common questions when people go on like a fasting restriction is that people knows, Hey, you know, I stopped snoring as much, or I feel and I sleep better. So there's, I think there's two components to it. I think fasting has a component for improving central sleep apnea, obstructive type. Once the obstruction is there, it's kind of always going to be there. But a lot of times the upper airway obstruction up here and even further down to the throat is created by inflammation, either through chronic allergies or chronic inflammation and hidden infections. You periodontal disease, sinusitis as hidden sinus infections, micro APS disease in the areas of previous dental work.

Dr. Ruan: And all those can create that inflammation that worsens upper airway obstruction if someone has sleep apnea, that can create a worsening inflammation in the upper airway obstruction. But once people go through a period of fasting, we know that fasting increases this concept called autophagy and autophagy use auto and phagy. Auto is self and Phagy is eating like self basically eating away your own damage cells. We actually reduces inflammation. So I do think that's a really good component of decreasing the effects of a operative obstruction as well as central sleep apnea. Temporarily, It's definitely not a permanent solution, you still have to bypass the airway with either a CPAP or if you qualify for oral device or a Palex device over time. I think it's very useful but we do know that people who go through fasting even intermittent fasting, prolonged fasting, fasting mimicking diet, every time they're getting better sleep they, it seems like inflammation is reduced and as they start losing pounds, we know they're losing a lot of waterway without waterway was originally retained by inflammation in the first place and that can temporarily reduced the upper airway obstruction.

Dr. Pawluk: Well, and you don't need a whole lot of reduction of airway obstruction to create a benefit right? You only 5%, 10% even.

Dr. Ruan: Yeah maybe not even that. Yeah and that's what's so interesting about it is that it's a small reduction and airway obstruction can significantly increase that called the Laminar flow of oxygen across, it's physics term, basically higher delivery of oxygen and decreasing resistance of upper airway. But you're right it doesn't take a whole lot.

Dr. Pawluk: Yup. So I think inflammation anywhere in the body can actually increase or amplify whatever inflammation is already present there. So again, like many times that we've discussed with these interviews, is straws on a camel's back. It's rarely one factor. Usually it's multiple factors, all of which are ganging up on you. They're stack.

Dr. Ruan: Yeah. You know, we call that here the toxicity load. And so once you're on the camel's back and then you have this massive downstream effects, and that's what we do find with people with chronic pain and you know I think the biggest impact of people with chronic pain and it's not necessarily obesity or sleep apnea. I do think that is underlying depression and social isolation. If we look at the veterans population for example after they come back from tours, once they go into this depressive state of pain. Complaints will dramatically rise after any sort of altercation with their spouse, their family and we know that for a fact. We also know that these veterans are three times more likely to have a heart attack after a conflict with their family. And so we go beyond.

Dr. Pawluk: that's called the broken heart syndrome.

Dr. Ruan: Yeah. The broken heart syndrome. So there's, there's two versions. That's one version which causes acute inflammation and the other version of broken heart syndrome, which is called Takotsubo's cardiomyopathy is when the extreme amount of stress can actually make the heart not pump and actually looks like someone's in heart failure or we've been having a heart attack. And so that's the extreme case of the, of the broken heart syndrome. And so, but either way whenever you have these issues with inflammation, circulation that always worsens chronic pain. So we know that social isolation, depression and what I called the expectation to reality mismatch. You expect yourself to be here, but in reality, you're really here. The bigger that gap, the worst than the depression. It makes people want to isolate themselves. And we see that in these ex NFL athletes.

Dr. Ruan: We see that in the military population. We see that in physicians who retire. Then we see that a lot of different you know, sort of, high level functioning people who something happened and they have a quality of life which they perceive to be less than what they expected and that all of that worsens chronic pain.

Dr. Pawluk: I think that's very important point, that chronic pain, isolation can cause chronic pain. Chronic pain also causes isolation. So you're in a vicious cycle.

New Speaker: It's vicious. And I've seen it happen so many times and I've experienced it myself. I've had multiple concussions myself and develop tremors and stuttering and all stuff like that. And so this is something that's really near and dear to me. And I have chronic pain issues, lumbar disc herniations just from sports and being really stupid with a snowboard when I was younger.

Dr. Ruan: And so I experienced all that, but I also experienced the other side, which is the healing component to it. So I mean, huge with fasting, love fasting, dietary, mind-body medicine, meditation and prayer. Which is actually a big part of my religion. I'm Buddhist but I had to re-embrace my Buddhism to really get through all that stuff. And so what I found is my tremors started going away. My tinnitus or ringing in the ear started going away. My vertigo started going away, which is great cause I've vertigo for over a year and a half. Ends up my functionality, my personality went back to it was before. I'm a nicer guy after going through that. But that downward spiral is just really near and dear to my heart and I can recognize it in people at different stages as they come into our office.

Dr. Ruan: But I will tell you the one thing, the biggest impact that we had with our patients going through what I went through with their chronic pain and depression and traumatic brain injury, the biggest impact is decreasing social isolation through group sessions. So we do a lot of group sessions in our office, and a lot of these people who come in, they're

already very apprehensive on the one-on-one. They do not do well. They're already triggered. They're coming into a doctor's office. You have your front desk, you have to get vitals. By the time that the blood pressure cuffs on there, they're already triggered. And they already have a rejection phenomenon in the group side. They come in with very similar people. And as we talked to people and they realize that people are asking the same questions. Oh my wife said that my personality has changed, you know, that people think that I'm more reclusive, but I don't really think so and it all these similar things come out and all of a sudden you have people that were asking the providers questions in the group session. They're asked to answer each other questions and realize that bond is so strong but at the time, the group sessions ended half the people pain scores or improved 50% anyways by that camaraderie and by that bond. And that is the most special thing I've ever experience in practicing medicine. And I think that's something that we can do on a large scale for chronic pain.

Dr. Pawluk: We talk about mindfulness meditation so this is another aspect and I know that there are people who participate in mindfulness meditation groups. It's not the same as what you're talking about. You're talking about therapeutic groups where there's dialogue. You're not just quiet meditating.

Dr. Ruan: Yeah. So we also have a mind body medicine track in our office that exists in groups but we actually recruit that group from the original group, which is basically a diagnosis focus group. So we have brain train, hormonal deficiencies, gut issues and stuff like that. And once we're able to recommend, people are able to bond and recognize that they're not alone, we put these cohorts through the mind, body medicine track. So those are two separate things. Or what I was talking about is they will come in and I will do what's called a master class, which basically describes entire disease state, the physiology behind it, what they're currently doing and what we perceive that they should be doing and what, and success stories and success stories is always number one. People are like, wow, this person can do it, I can do it. And really, really often we have our success stories in the front row. They turn around. Yeah, that was me. And when people see that they get extremely encouraged and that is the best way right now that we deal with chronic pain on natural side.

Dr. Pawluk: It is a groups. And you have specific chronic pain groups?

Dr. Ruan: Yes. Because half of these people would never come to a one on one session with their physician ever.

Dr. Pawluk: And again, you're talking mostly about ex military or does it matter?

Dr. Ruan: No no no everyone. Everyone. Yeah. This is not just specific to ex-military. The ex military liked to come together so for example, our next one is in a week and a half where we have a military veterans day where they come together and socialize. We cook for them, they cook for themselves. We feed them good food, plant based nutrients and we give them tactics just like we talked about today on, you know, some of the things to do with in a lot of them have chronic pain and depression and social isolation. But when they're amongst their own cohorts, magical things happen.

Dr. Pawluk: Well that is aside from obesity, it's an aside from fasting, but it's an important component of a comprehensive program for pain management.

Dr. Ruan: It is. And guess what, you know, it works for obesity because you know, people lose weight faster and groups, they're more accountable in groups and then we do have a metabolic program. We have a diabetes program as well and a lot of them do have chronic pain, so we put them into different cohorts. And so there's a lot of hodgepodge of two people in the groups but there's always a really good sensation, you know, after the one and a half to two hours of the groups. And then it allows for further healing to happen in all aspects of health, brain health, metabolic health, sleep, depression, and the whole nine yards. It's wonderful to see.

Dr. Pawluk: Fantastic. So let me go back to fasting for a second. There are clearly lots of perspectives on fasting and it gets confusing. How does an individual person decide what their fasting style should be?

Dr. Ruan: That's one of the most common questions that we have in the practice. So it depends. Right? And so this goes back to the, Hey, what's the best diet for me, doc? Well, it also depends. It's one that you can adhere to that's that you feel good with. And the same thing with fasting. So let's say if someone's never fast before and they perceive themselves, have, you know, food addiction,the first thing I started with, Hey, just see if you can just eat during, during the daylight when the sun goes down, you're done. I'm not going to talk to you about what you eat. Just decide to do that first. What we realize is that when people do that, they start getting to know themselves. They think that, Oh, this is easy and then they didn't realize how many times they actually open the fridge and nighttime open, Oh, I can't eat anything.

Dr. Ruan: Oh, I opened and I can't eat anything. And then that actually create a little bit of fight or flight for them at that moment. But then when we track them over time that people do well and then so we kind of stage it out so it depends on what people really want. Like so in terms of chronic pain that we're talking about here, people with chronic pain. The last thing they want to do is fast, right? That's like the last thing on their mind. This is like, Oh my God was like, fasting doesn't make any sense but when we're able to tell

them, Hey, we're trying to help restore your sleep wake cycle, which helps you to brainstorm cognitively, they understand that there's a useful component, they'll do it. But we also start them with like a circadian rhythm fast, which is eating only during the, during the daylight.

Dr. Ruan: And and then we start incorporating plant-based nutrients. And so why do we do that next? We do that next because we know that when you eat vegetables of different colors, you've got the phytonutrients spectrum, the purples and reds, the greens and the yellows. When you incorporate all those colors, there are massive neuropathways that starts to become balance indirectly through the microbiome to the gut bacteria. And so these actual colors that we're ingesting, these polyphenol, that we're ingesting is changing the way that the, our gut bacteria functions is changing their genomic expression, which indirectly changes our genomic expression within the brain. And it happens fast. So when people, it is funny because when we have couples do this the wife will say he didn't have his purple yesterday and he was mean, but when he had his purple today, it was much better.

Dr. Ruan: So we hear that all the time. And so yeah, it gets your purple cabbage and purple cauliflower. I get the red stuff thing you get the yellow stuff and once people would do that to like, you know what doc, like this is easy. I can, I can do this. I'm more motivated to do it and they recognize that their inflammation is low and they recognize it, because when they get off of it, like the following day, they don't feel very good. And then when they incorporate the colors again, boom, next 24 hours, it's like they're back on. So they're motivated. Now they're motivated. It's like, okay, now what else can I do? Well, let's try a fasting mimicking diet and which is basically a calorie restricted five day program. It's use the ProLon and we start there. They don't want to do that.

Dr. Ruan: Well let's try just the 24 hour water fast on Monday or on Friday, whichever day they want, and pick a day where you're least stressed. If you're really stressed out that they would not want us to really want to want to fast because you have a negative association with fasting, with the stress. So we kind of tailor it onto people and then there's no universal fasting way. It's just that this is the way that we have, we have kind of layered the approach so that people are able to understand their body. And you know what if people feel bad when they eat a certain thing and that's okay, you feel bad. We recognize it, let's try something else. It really takes the individualized approach and also if people don't do well on one type of fast but if you change your diet, maybe a month later you might do well in that type of fast because your gut bacteria is different, your brain chemistry is different, your hormones are different by that time.

Dr. Ruan: And so a lot of this kind of playing around to see what can be done, what will you do and who's going to hold you accountable and what are we seeing in terms of results. And so

what we do in our practice. We do a lot of data. So we look at, you know, carotid thickness, with carotid plaque and in fatty liver disease. And we actually can see ultrasound changes as people move through even at like a short five day fasting mimicking diet or even a month where they're fasting one day a week. And we're seeing massive changes in the liver physiology and even in the carotid arteries, we'll see that the intima, which is one area of the arteries can get a little smaller, which is, that's what you want. That means the inflammation is being reduced. And so our metrics we're seeing is really, really fast with the fasting in combination with dietary change and stress reduction.

Dr. Pawluk: Now you've mentioned the ProLon P R O L O N diet, which is a commercial diet that's based on fasting mimicking. Right now there are, I think online, there are also people who have developed guides that you can actually cobble together yourself, you don't have to buy the ProLon diet.

Dr. Ruan: Yes, yes. And so with ProLon, there's a lot of evidence that's behind it. It's a lot of what they do is NIH funded. And so, you know, I never, I hate to tell people you can just piece together things that can mimic, the fasting mimicking diet. And just because I'm very evidence-based and if you look at the evidence, if you actually look at the fasting mimicking diet, the ProLon kit, they actually did three months studies on it where people were doing a five day fast mimicking diet once a month for three months consecutive. And they were seeing inflammatory markers improve visceral fat or the fat surrounding the organs being decreased. And so that's a very specific thing that I think people need to understand that it's not something that you just put together and put this in number of macros together and voila and have a fascinating diet. Excuse me.

Dr. Ruan: And so you know, having said that I don't want people to just, you know, just do it out of the blue. I do think that a lot of people need the guidance of a nutritionist or functional health coach or dietician or physician that's trained in dietetics or functional medicine to really guide them through. And so, and the reason behind that is I think when people get into trouble when they try something, there's a high abandonment and they're like, I'm never going to touch this again. Right? And we see that a lot and there's a resentment to it. And psychologically speaking, especially with someone with chronic pain, if someone with a chronic pain try one thing, it doesn't work, they will forever perceive that to be a negative association.

Dr. Ruan: And it's really hard for them to get it back. So when people with chronic pain, go into any sort of fasting type schedule, there needs to be an expectations. Like, yeah, you will feel hungry, but we want you to feel hungry because hunger does ABC, just like we said before, and helping the brain reduces these these chronic pain attributes. And so now we're like, Oh, okay. Because you know, most people these days perceive hunger itself

to be a bad thing because we were trained in it, right? Yeah. My mom told me, don't be hungry, eat a lot of snacks as a kid, and et cetera, et cetera. You know, and they're like, you know, don't be hungry cause we weren't hungry as a kid, wouldn't want you to go hungry. But the actual, you know, hunger response is actually can be beneficial to someone with chronic pain, with intimate in spurts. And so I think the expectation needs to be there and I think that people have to understand that there's accountability, expectations and tracking. Those are the three things, especially with people with chronic pain that really need and very frequently so we understand what's going on for their particular body. Cause everyone with chronic pain is so different.

Dr. Pawluk: How long should people stay on a fasting or prolonged type diet?

Dr. Ruan: Well, that's a good question. So for fasting mimicking diet or just the ProLon, it's a five day, so we start with, you know, once a month for three months because that's what the studies show, the biochemical markers. I think that's a great start.

Dr. Pawluk: so it's just five days out of 30 days that you have to do that. That diet and it's not zero calories. It's very low calories but specific types of calories for five days and then the rest of the month what do you do?

Dr. Ruan: So we tell people, so if you look at the original study that's done on the fasting mimicking diet the ProLon. They didn't tell people to do anything differently in between the months. And so even if it just tells you to people to eat what you normally eat, but what happens generally is people get really empowered that Oh my God I can lose so much weight in just five days, I don't really want to mess it up. And there's a behavioral change that happens but just by the study design alone, they didn't tell him to eat anything differently, but they're still able to see the reduction in the visceral fat or fat around the organs, which is really hard to get but they also retain their lean body mass, which is very interesting cause that's not what I would expected.

Dr. Ruan: But what I tell people is that get all the colors of the rainbow then in the plant base, from plants. Just worry about that and then just eat during the daylight cause we know there's a longevity effect that happens in between those two rules. Keep it real simple. Especially someone with chronic pain, they just need simplicity and that can create such a huge amount of success. And I'll tell you this, people have tried, the people who come to our clinic have tried like everything, no vegan and the whole nine yards, right? And so most of them are actually really quite successful with the fasting mimicking diet and in between doing the circadian with the fasting eating only during daylight and incorporating all the plants and it's kinda like our go to now just because it's universally very good.

Dr. Ruan: And those people with chronic pain, like I said, the last thing you want to do is go through some sort of restriction because they feel restricted mentality already. We just have to let them know this is something to empower you. This is the empowering tool that we have for you. And this is better than anything that, that we know. And so I think once we get the point across, I think it becomes really good, and on a side note, you know, we do use, hemp based products, CBD if you will and we recommend it and it actually has a pretty good effect obviously with chronic pain in general, but during the, any sort of fasting mechanism, people who want to use it, we allow them to use it and they actually experience, it's a much better experience sometimes, uh, for, for some of these people. But these are just anecdotal things that I haven't really studied for but that's something that may help as well.

Dr. Pawluk: Well sure. Because all of these changes and pain are obviously already causes anxiety. So CBD not only helps with the pain, but also helps with the anxiety. So which comes first, it doesn't matter. And then it also helps with sleep. So if you've got those three things that are going for you with CBD, the issue with CBD that is finding the dose for you because people often undertreat they don't do enough CBD.

Dr. Ruan: Right? And so, you know, we call it CBD, but there's other cannabinoids usually that are, that are in there as well in the hemp based products with different combinations but we do find that that itself we know is great for chronic pain but when you combine that with, with fasting, just anecdotally from a lot of the patients in my office, I mean, they do exceptionally well and then the other thing with hemp and cannabinoids and the turpenes as well in it is that it modulates the immune system. The immune systems controls the information as well so you can actually get to the root of the deficiency a lot of times with these products but I think that when you combine that with a fasting approach, with a great diet, with mindfulness and meditation then that's a killer strategy that works,very, very well.

Dr. Pawluk: Let's go back to the concept, the issues of obesity cause people who are obese want to lose weight rapidly, but the fasting mimicking diet will help you to lose weight, but it may not help him to reduce it, you know, radically and rapidly.

Dr. Ruan: Well, I think yes and no.I think the record in people going through the fasting mimicking diet in weight loss is 37 pounds is actually one of our patients and he started a just a tad over 500 and so in the second round he lost 26 pounds. And so nothing's been faster for him than that. But you know, he works in an environment where there's a lot of toxicity so basically working with cars and different chemicals and stuff like that. And so I do think that people with higher toxicities and he has terrible chronic pain, like terrible chronic pain in his hip and the back. And he's able to find that as when the weight

reduced so much, his swelling reduced so much his pain almost went away so in that regards, I think it's actually quite fast and he's really good at following rules.

Dr. Ruan: So it's like, okay I'm gonna do more fasting mimicking diet and my 5 days and eat during the daytime. It's actually did all well for him but you know, do we look at the studies, we know that the biggest contributions to chronic inflammation and metabolic syndrome is visceral fat, the amount of visceral fat and with the studies looking at the fasting mimicking diet, there's no denying that visceral fat is the one that's reduced. And there's no denying that after the, you know, the three in a row or in 90 days, there's no denying that lean body mass is preserved, which is not what we see with intermittent fasting cause you can lose lean body mass. It's not what we see with water fasts and it's not what we see with prolonged 48 hour fast. Because all those, there's a lot of studies showing that you can lose a lot of lean body mass.

Dr. Ruan: But that's not what we really see with the fast mimicking diet which is something that well that's something that I love. And of course, you know, that costs money and so some people just don't want to spend the money, but just empower these people with chronic pain. That's how we kind of start. you know, and just, just try a little bit at a time during the day, like get your plant based nutrients in, get those phytochemicals to come in and make your body feel really happy and then we start progressing on to see how far we can get. And I think that's sort of, I call it the empowerment schedule and that empowerment schedule that works I think quite well.

Dr. Pawluk: This is all incredibly invaluable resources, very practical solutions for people and even if they did a ProLon type fasting mimicking diet for only like, say three months, even by itself, that that can take you a long way. Now whether you want to continue after that or still get the benefits of all the other things that you were discussing. Those are all so very helpful. Last thing I'd like to ask you, if you wouldn't mind sharing resources that you would recommend for the viewers.

Dr. Ruan: Oh, so yeah, so I will tell you that if you are in chronic pain, you probably have been searching for a lot of answers online and seeing stuff like this. And if you're actually searching for stuff like this, I really commend you to understand the knowledge and to your work. So I really have to applaud you guys for even listening to this because it does take valuable time out of your day, but it is something that you've invested into to follow me. I'm very active on social media. So my name is Dr. Cheng Ruan, so C H E N G R U A N if you search for that on Facebook, Instagram, I'm there. I'm also on YouTube as well. And so I'm very loud when it comes to stuff like this just because you could probably hear the passion in my voice and to help everyone really understand this. I will be doing soon I'll be doing some follow up videos between me and former pro players

going through chronic pain as well as military veterans going through chronic pain and give you a more emotional component to see

Dr. Ruan: What that looks like so people know that you guys are not alone in chronic pain. And I wish everyone luck.

Dr. Pawluk: Thank you. And also our again mentioned Dr. Ruan's book, called "The Ultimate Guide For Type Two Diabetes Reversal". It may be a little outdated now, only a few years, but just so I'm sure, very valuable resources. And then you have a website.

Dr. Ruan: My website is ruanmd.com. It's R U A N which is my last name, M D like medical doctor.com. And you'll find me there as well.

Dr. Pawluk: Fantastic. Thank you Dr. Ruan. I know you had a busy day today traveling from Houston, from Dallas, I mean to Houston, and thank you again for taking your time to share your wisdom and knowledge and experience with us.

Dr. Ruan: Thank you so much. I appreciate it.

Dr. Pawluk: Thank you.