Lesson 4: Insulin and Insulin Resistance

Hi, everyone. Welcome to lesson four. Today is a big day because it's a big science day. For the last three days, you've been hearing me talk quite a bit about insulin, insulin resistance, and metabolic syndrome, the different expressions of insulin resistance. I know that some of you know the science way too well. I will not do that justice probably today because you're fully aware of the connection between insulin and insulin resistance, and the connection between insulin resistance and metabolic syndrome and how obesity and diabetes look totally different, but they're totally connected and related.

A lot of you are very aware of the science and know the science very, very well. Today will just be a fun lesson for you, but some of you are still struggling to find and understand the difference between, for example, insulin and blood sugars. How do you measure one and the other? Are they the same thing? Why are we talking about insulin so much and not calories? How is insulin behind insulin resistance and how is eating and eating late and stress and sleep and all the things that we've talked about in the last few days, how are all of these things connected to your particular goal and your particular insulin resistance, expression or metabolic syndrome expression, and how is insulin resistance and metabolic syndrome related?

Are they one and the same thing? Before we can go on to tomorrow's lesson, which I know is one that many of you are looking forward to, we're going to talk specifically about intermittent fasting schedules, and particularly about fasting schedules for weight loss and women in weight loss. That will be tomorrow, lesson five, but today for lesson four, I'm just hoping to make some connections here for you. I think some necessary basic information in knowledge, necessary basic knowledge in order for us to be able to understand what we're doing so that we do it better. Personally, I was a science major and when I was in school, one of my favorite subjects, science subjects, was genetics.

I'm going to talk to you a little bit about genetics today as well in a fun way. We're going to talk a little bit about you and your family. Insulin, as you probably know, is a hormone. It's a very important hormone. Hormones are these chemicals that our body produces and they're messengers. They give our body a lot of messages, and there's receptors for these hormones all over the body. It's sort of a lock and key thing. When the right hormone goes to the right receptor, it basically sends a message and then the body creates a function or responds according to that hormone. Usually, this goes off very well.

We have many different hormones and we often talk and hear about hormones, particularly in this masterclass. Why is it important to understand our hormones, including insulin? Critics of intermittent fasting will often claim that fasting is bad for women because it affects your hormones. But it's bad for me because it impacts which hormone? The main hormone that we're talking about is insulin. We all produce insulin. There is a small subset of people that have a faulty, unfortunate faulty insulin production because of a type of diabetes. Type 1 diabetes is

different from Type 2 diabetes. A lot of people here suffer from Type 2 diabetes or are pre-diabetic.

That means that you are likely producing an abnormal amount of insulin, so too much insulin leading to insulin resistance. That is why you develop Type 2 diabetes and all the other expressions that we're going to talk about today. But young children that get diagnosed with Type 1 diabetes have an autoimmune condition that affects their pancreas and either completely stops or they don't produce enough insulin in order to thrive, to grow, and in order to manage their blood sugar. It is a condition that needs to be diagnosed and treated as soon as possible because in the past, when this wasn't known and not yet discovered, young children with Type 1 diabetes, unfortunately did not survive.

Understanding insulin and having the ability to provide exogenous insulin, that is insulin that is not produced within your body, but that is injected into your body in order to manage Type 1 diabetes is extremely important. This, of course, teaches us that insulin is a necessary and very, very important hormone. One of the most important functions behind insulin, of course, is managing our blood sugars, like we see in Type 1 diabetics and Type 2 diabetics. Type 1 diabetics don't produce enough insulin or any insulin. Type 2 diabetics likely produce too much insulin, leading to insulin resistance. Not only is it behind managing our blood sugars properly, but insulin is also behind our fat storage.

Obesity is also caused by insulin resistance or having too much insulin in our body. This is really what Dr. Fung talks about in The Obesity Code book. Dr. Fung has many resources and many places that you can read and learn from. Dr. Fung has explained how obesity, the expression of too much fat storage, is actually caused by hormones like insulin and not by eating too much. Obesity is actually not a caloric problem. It's not a problem of eating too much and exercising too little. The old and faulty calories in, calories out model or the eat less, move more theory. All right. Obesity is caused by too much insulin leading to insulin resistance.

This is exactly what The Obesity Code talks about, by overproducing insulin we end up developing insulin resistance and expressions such as obesity and Type 2 diabetes. Two different expressions, they look different, but they're actually related. Insulin is a very important hormone when it comes to our reproductive health. We learn quite a bit about this in women with PCOS. PCOS, polycystic ovary syndrome, is a very common condition, a very serious and debilitating condition. I am a woman who suffered with PCOS. Now, we know that insulin has a lot of functions. It's a super important hormone, because it not only manages your blood sugars, which is super important, it manages your fat storage and it manages, of course, your reproductive health.

If your hormones are out of whack, unbalanced, then you don't have a regular menstrual cycle. That's an issue because if you don't have a regular menstrual cycle, then you don't ovulate properly. Of course, if you don't ovulate properly, then you can't get pregnant. This is a big problem for many, many people. Infertility is something that we will talk about as well. But of course, that's not the only important thing when it comes to our reproductive hormones. We

learned this, of course, from women with PCOS, because when your insulin levels and your insulin resistance is higher, there are many other things that go out of whack.

It isn't all about fertility for some of us. You have a lot of other expressions of PCOS, and PCOS is a syndrome, so it has many different expressions in many different people. But some of these expressions, of course, you will recognize such as acne, abnormal facial and body hair growth in women, as well as the opposite hair loss in women. Some of the associated concerns to insulin resistance, so having too much insulin leading to insulin resistance will lead to expressions such as diabetes in some, obesity in others, PCOS in others. But many other associated concerns like heart disease and things like fatty liver that many of you recognize, and sleep apnea, and many other concerns that we will talk about today.

How do you manage insulin properly? Insulin is one of these things that the medical system, the conventional medical system hasn't yet really managed to come up with a lot of medications to properly manage insulin. There is some medication for diabetes, there's even some medication for weight loss, but none of these medications address the root cause of the problem. That's why they're Band-Aid solutions. When you look at conditions such as diabetes, it is considered a chronic progressive disease. Over time, people just have, keep on taking more and more and more medication in higher and higher doses. Then, obviously, none of these medications are dealing with the root cause because they're not helping you cure this condition or reverse this condition.

That's because none of these medications are treating the root cause of the problem, which is insulin in an abnormal or increased insulin production. That's what we are going to do together. The same thing for obesity, there are some medications out there in the conventional medical system that supposedly helped with obesity because they helped to manage either your appetite or your fat storage or whatever. But none of these medications deal with the root cause, which is insulin leading to insulin resistance, so people tend to gain more and more and more weight. There are surgical procedures that, again, are not treating the root cause of the problem.

Although they may cause some symptomatic relief temporarily, they are again, not dealing with the root cause. That's why it's important to understand the role of insulin leading to insulin resistance, and how this is all related to metabolic health. That's the boring part. The fun part is understanding the difference between insulin and blood sugars, for example. Insulin is a hormone and, of course, blood sugars are not a hormone. Blood sugars are the levels of glucose, of sugar within your bloodstream. Diabetics understand this very, very well because they have machines, likely a glucometer, that measures their blood sugar and they know when their blood sugars are higher and lower.

Lesson 14, we'll talk about measuring all of these things, if you're interested, but insulin and blood sugars are not the same thing and they're not measured the same way, okay? Measuring insulin is a lot trickier than measuring blood sugars. For you, you could measure your blood sugars at home, and many of you do, but measuring insulin is something that can only be done, at this point in time anyway, can only be done in labs. You can do your fasting insulin test in the

lab, if your doctor sends you to do that. That will let you know what your insulin level is at that particular moment in time. Normally, it's done in the morning.

People with insulin resistance, of course, have a higher level of fasting insulin. How do you test for insulin resistance or rather, how does insulin lead to insulin resistance? Let's start with that. Insulin is a hormone, again, that we produce in our pancreas naturally and we are hoping that we produce the right level. Not too little so as to not cause Type 1 diabetes, but we also don't want to produce too much insulin because that leads to, again, insulin resistance and the different expressions of insulin resistance. Insulin resistance is a syndrome. It's a condition that you develop when your body produces too much insulin too often.

The word resistance is not a word that you don't recognize. It's a word that you've likely heard when we talk about different things. We can become resistant to many things. We can become resistant to noise. If we hear too much noise too often, we become resistant to it, right? Smell, if you smell a bad smell or a good smell, for example, your own perfume. If you wear the same perfume every single day, all the time, and over time you may notice that you can't even smell it anymore. You need to put on, and many people unfortunately end up doing this, putting on way too much perfume. Every single time you put on more and more perfume, because you can't smell it anymore after a while, you've become resistant to that smell.

The same thing happens with insulin in insulin resistance. If we produce too much insulin too often, our body becomes resistant to it. In order to do the exact same function, our pancreas needs to produce more and more insulin. The problem is that the more and more insulin you produce, the more and more resistant you become, and so then, the more and more expressions of insulin resistance you develop. Insulin resistance is on a spectrum, meaning it can get significantly worse over time, but you can also reverse it. How? By lowering insulin. How do you increase insulin resistance? By producing too much insulin too often.

How do you reverse insulin resistance? By producing less insulin less often. Lucky for us, we know how to produce less insulin less often. If we go back to our five pillars that we've already talked about, we know how to lower insulin production. There is a solution, as Dr. Fung says, if the problem is insulin, the solution is to lower insulin. How is insulin resistance behind obesity and diabetes and PCOS? These are the three that we recognize very, very well and this is likely the concerns that most of you coming in today are dealing with. When insulin is very, very high, we go into storage mode.

We store more fat. We go into retention. We get a lot of fluid retention leading to inflammation, possibly pain, possibly retention leading to hypertension, so high blood pressure. We go into this hyper retentive mode. Okay? When insulin is high, we retain, we gain weight and we store fat. Then, when insulin is low, we go into release mode and we go into fat burning mode. Obesity is one expression of insulin resistance. The other expression, of course, that you probably recognize very well is Type 2 diabetes. Type 2 diabetes, of course, develops over time because of poor blood sugar control. You produce too much insulin over time, your body becomes resistant to it.

Then, you do not manage your blood sugars properly because now your body is resistant to that insulin and you need to produce more and more insulin over time. Your body is resistant to it, which means it's not reacting to it appropriately. It's not getting the message and it's not lowering those blood sugars. Over time, it's more and more challenging for your body to lower those blood sugars to a normal level. Then, over time you develop what is known as Type 2 diabetes. You get an A1C, which is an average blood sugar level that is higher than normal. Over time, it gets worse and worse and worse. Dr. Fung and I wrote a book called The PCOS Plan, Prevent and Reverse Polycystic Ovary Syndrome Through Diet and Fasting.

I won't be able to summarize the entire book, but please note that the theory and a lot of the practical recommendations in our book are going to be talked about in this lesson and in another lesson. How do we know that insulin is behind PCOS? Well, insulin has these awesome but very powerful reproductive functions. Young women with PCOS have an overproduction of testosterone in our ovaries, that's where the testosterone is produced in women. We have an underproduction of another very important hormone in our livers. High insulin will send a message to your liver to underproduce another hormone called SHBG, which is sex hormone binding globulin. Now, it's a two-fold problem.

You have too much free testosterone, if you're a young woman with PCOS produced in your ovaries, and you have too low SHBG production in your liver. This SHBG that's produced in your liver, its job and function is to bind that free testosterone and take the testosterone where it's supposed to go and perform its function, so that it's not roaming around free in your body. First of all, testosterone's very difficult to measure in women because it fluctuates quite a bit throughout the day. What is normal and abnormal? It's hard to define, but what we do know is that young women PCOS have too much free testosterone roaming around that's not bound to this SHBG produced in your liver.

Now, you have all of this free testosterone to roam around and do whatever it wants. It goes to your skin and gives you too much acne. It goes to your skin and gives you too much facial hair. These are all these physical expressions of male pattern baldness. What it also does is it gets in the way of your normal reproductive cycle, of your normal production of estrogen and progesterone. If you're not properly menstruating and you don't have a regular cycle, you're not ovulating, which then, in turn, will cause other problems. If you're not ovulating, then you're not producing an adequate amount of progesterone. Again, of course, there's a feedback here between all of these hormones and all of it is caused by too much insulin.

How is obesity, diabetes, and PCOS, how are these things all related? Why do some people have obesity and others have diabetes and others have PCOS? Why do some have all of these things together? Why do some women have PCOS but they're lean and other women have PCOS but they're obese? This is where the genetic lesson comes in and it's a bit of fun here. How are all of these different expressions of insulin resistance related? Think about it this way. Imagine you are Joan. Okay, Joan. Your cousin's name is Mary. Joan and Mary are first cousins, but they look nothing the same. Joan is blonde and Mary is a redheaded young lady. Joan is short and chubby, and Mary is tall and skinny.

Joan has, of course, expressions of obesity or weight gain and Mary does not, but yet they're first cousins, they're related. Unfortunately, Mary, at some point in her life develops diabetes, yet she's not overweight, but they are blood cousins and they are related because they have the same paternal grandmother. Let's call their paternal grandmother, insulin resistance. Their grandmother, IR, has passed on these genes to both Mary, the red headed cousin, and Joan, the blonde cousin. Maybe Joan and Mary look somewhat alike. Maybe they have their grandmother's blue eyes. Mary's dad and Joan's dad are brothers. Both of them are, of course, the sons of insulin resistance. Let's say that Mary's dad and Joan's dad both have fatty liver.

Fatty liver, as we recognize, is a precursor to both diabetes and likely obesity, right? Hopefully, you can see the relationship and how people can be related and things can be related and conditions can be related, even though they look nothing alike. Too much insulin causes insulin resistance, and we know that that leads to, very often, very quickly, fatty liver. Fatty liver is something that you probably recognize or central obesity, even in people that are not excessively overweight, they might have too much fat storage in their organs, particularly in their liver, right? That is an expression of insulin resistance, and that further leads to other expressions of insulin resistance.

As you go up in that insulin resistance spectrum, you may have more and more expressions, but maybe your particular expression, and that is genetic, your particular expression of insulin resistance is obesity. Maybe your cousin's expression or somebody else's expression of insulin resistance is diabetes. Yet, another person's expression of insulin resistance is PCOS. Again, they're all caused by too much insulin leading to insulin resistance, but you may have a genetic predisposition to obesity. Somebody else may have a genetic predisposition to diabetes, and yet somebody else may have a genetic predisposition to PCOS. These are three common, serious, debilitating conditions that we can easily recognize and treat.

Some people, of course, are hybrid. Maybe Joan and Mary have another cousin and his name is John. John, unfortunately, has both diabetes and obesity. He doesn't have PCOS because he's not a woman. Over time, if you allow your insulin resistance to get worse and worse and worse, you may develop further and further expressions of insulin resistance. Maybe you started off, as I said, with fatty liver. Next comes diabetes. Eventually, even diabetics that weren't overweight will develop fatty liver. Some central obesity, maybe not very obvious in prominence, but over time they may develop, and this happened with me.

I started with pre-diabetes and with fatty liver, but over time I did start to gain weight, even though I was a very thin young woman. The same thing will happen to other people. Like, for example, people that maybe start off with obesity, maybe you were somebody who was a very overweight child. Over time, unfortunately, your insulin resistance got worse and worse and you gained more and more weight. By the time you were 30 or 40, unfortunately, you developed not only fatty liver, but also you developed diabetes. You can see that over time, as your insulin resistance, as you go further on that insulin resistance spectrum, you may develop different expressions of insulin resistance, or you may just be genetically predisposed to one, but not the other.

That's how all of these are related. You may have abnormal cholesterol levels. You may have hypertension. Of course, we mentioned central obesity. Very, very often, I get messages from people asking me about other conditions that they haven't yet heard be related to insulin resistance. They're always wondering whether or not fasting can help heal and reverse these concerns. Young women that have not been diagnosed with PCOS, I get a lot of these messages. I haven't been diagnosed with PCOS, my doctor says I don't have PCOS but I have a lot of acne. I don't have a regular period. Can I reverse these different symptoms or expressions by intermittent fasting and low carb diets?

Regardless of whether or not you've had the diagnosis of PCOS, if your particular expression or concern such as acne is caused by too much insulin, then yes, lowering insulin through fasting and the low carb diet will help eliminate that acne. Even though you don't have, unfortunately, a diagnosis or a way of checking for that insulin level, it is an easy fix if you figure out how to do intermittent fasting properly, such as TRE. Young women can obviously start to implement this in their lives. I often say that sometimes getting a PCOS diagnosis seems like doom and gloom, but for a lot of people, there's a relief associated with that diagnosis, because now you know what it is and you know how to treat it properly, if you've read our book.

Is endometriosis related to PCOS and can I reverse endometriosis through fasting? Well, endometriosis is not the same as PCOS and I'm not claiming that endometriosis is caused by insulin resistance. But what we do know, again, is that insulin is a very powerful hormone and having too much insulin in our body leads to not only too much weight gain and diabetes and PCOS and many other concerns, it also significantly increases the inflammation within our body. Let me make this very, very clear. If you have any inflammatory conditions such as endometriosis, such as arthritis, or any other inflammatory concern, lowering insulin will be beneficial in helping you lower that inflammation and pain.

Even other conditions that may not directly be related to insulin resistance, or may not be caused by insulin resistance will unfortunately get worse. The more insulin resistant you are, the inflammation will increase. The more insulin resistant you are, when insulin goes up, inflammation goes up. When insulin goes down, inflammation goes down. We can measure the markers for inflammation and insulin and we can see this direct relationship. I was someone who suffered from hypertension, high blood pressure at a very, very young age. I, of course, now know that this is related to my insulin resistance.

I increased my insulin quite a bit over the first 30 years of my life, because I ate too often, too late, and I ate a lot of processed foods that caused a lot of insulin production. I had terrible sleep and terrible stress management techniques. Too much insulin, too much insulin resistance led to my own expression of insulin resistance and metabolic syndrome, hypertension and central obesity and all these other things. Yes, hypertension, for sure, is one of these conditions that can be reversed in some cases, depending on what's causing it, myself included. I was able to get off blood pressure medication because my blood pressure dropped significantly once I lowered my insulin levels.

Sometimes people will talk to us about autoimmune conditions and lowering insulin can help with some autoimmune conditions. Again, if lowering inflammation will help your particular autoimmune condition, then lowering insulin will definitely help. Cancer is a big, big, big topic. For that, I do refer you to Dr. Fung's book, The Cancer Code. Understanding insulin, once again, and understanding insulin's functions in the body will lead you to understand how certain cancers can be prevented, hopefully, or at least we should be making a concerted effort to lowering our insulin in order to prevent some of these very, very serious conditions and concerns as much as we possibly can.

It's no secret to you if I finish off today's lesson on a very positive note, because a lot of this might have sounded a little bit doom and gloom, and that was definitely not my intent. I am a solution-driven kind of person, and I hope that you are, too. The solution to reversing insulin resistance and to lowering insulin is to eat less often, to eat significantly earlier, to focus on foods that produce less insulin when we eat and to manage our stress and sleep on a daily basis. All right, guys, I'm looking forward to lesson five, where we're going to go over different intermittent fasting schedules, particularly schedules for weight loss and reversing your insulin resistance expressions.

All right. Stay tuned for that. I can't wait to see you tomorrow. If you have any questions for me, please email us at Masterclass@TheFastingMethod.com. Those questions will be sent to me, and I will get to address them in our Q&A. Please, if you haven't already, either in your app or on our website, under our community forum, you will find a special thread for this masterclass, where you can introduce yourselves about your own particular expressions of insulin resistance and your goals. You can tag me on any questions that you have by writing @Coach_Nadia, and my name will pop up. Looking forward to tomorrow. Thank you so much. Take care. Bye.