Can A PEMF Device Change Your Gut Microbiome And Improve Your Mental Health? Transcript

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Introduction and Guest Background

– Hello everyone and welcome to the Microbes and Mental Health Summit. I'm your host Dr. Miles Nichols here today with Dr. William Pawluk and Dr. William is sometimes goes by Bill. We're going to call him Bill here for the informality. Bill is integrative physician in near Baltimore and he is an authority in the space of looking at pulsed electromagnetic therapy. And he has a nice mix of training in Western medicine and eastern therapies. And he is also someone who's held academic positions at Johns Hopkins and so welcome. Dr. Pawluk.

– Thank you very much. Miles, How are you today? – I'm doing wonderfully. How'd you get interested in post electromagnetic therapy medicine? Eastern and Western.

How did this come to pass for you? – I think a long time ago in the background I had an interest in acupuncture even in pre med. And but it never came to fruition because that was like 19, I'm gonna read my age, but you know, you're talking about the early seventies and as a result, there was no tutoring, there was no teaching, there was no nobody to back back up what I would do. So basically, I put it aside years later in the in the eighties when I was a chief of founding medicine for a group in New Jersey and a medical director for a larger group, 30 doctors, we shared patients in the hospital routinely.

And within a very short period of time we had almost, we had like two patients who almost died from gastric league Gi bleeding. And the common factor was Ibuprofen was nonsteroidal anti inflammatories.

So I started asking myself, this is stupid medicine, this is what's called insanity, right? This is insanity medicine, repeating the same thing over and over again, crossing your fingers and hoping for non negative results. So because of that, I said okay I have to find a different solution to dealing with pain in the group as well as from my own patients.

And that resulted in me taking some training through U. C. L. A. In acupuncture. But at the same time right around that time that was 1990 acupuncture, What's that? And so people would not do needles because there was no sort of um emphasis behind it, no knowledge, no confidence behind what this strange thing acupuncture is.

And so I started looking at magnets on acupuncture points. So instead of talking about acupuncture with needles, we're not talking about acupuncture using magnets. And I started seeing all kinds of things happening with magnets that I never expected.

It wasn't just acupuncture, there's a lot more going on than just acupuncture. And that led to more and more research, more investigation, more trial and error, more use of PMF therapies and I got hooked along the way I met an MD PhD from the Czech Republic who had translated a lot of that Eastern European literature.

So basically we were we were flying blind essentially using magnetic field therapy because there was no good science behind it. Or at least it was hidden behind the iron curtain. That was truly a curtain back then.

And so having met him, he translated a lot of this and I said, whoa, like the whole whole world opened up about magnetic therapies in eastern Europe and they've been doing that by the time I met him, they've been doing that for over 30 years.

So wow! Now now we really surged forward with the European art therapy got devices from eastern Europe and as they say, the rest is history. So as a result of that, I I've been now doing magnetic therapy for about 30 years and I focused on that because there was nobody else basically doing that, nobody else coordinating this.

Nobody else supplied the scientists science behind it. And since I had an academic background to some extent I had that kind of mindset academic mindset. Then I began to accumulate studies and literature and abstracts and papers and so on.

So by the time I wrote the first book, um my first book other than magnetic therapy in Eastern Europe. So that that book was the result of my collaboration with Dr. Jarvik but it was very summarized, not very useful quite frankly. So then I did another book called Power Tools for health, where I took a lot of that literature that was all over the place.

It's not like there's one journal like Lance it or something like that that you can go plum and find everything you need. So we need to have one place where a lot of that science would would reside.

And I discovered that magnetic field therapy had like 25-27 different mechanisms of action. Which was really very interesting to me as a family physician because as a physician, I was trained in one disease, one treatment kind of paradigm.

Right? You got a drug, you got a disease vice versa. Just decide which way you want to go. But magnetic therapy did so many things. You can't be pigeonholed into one condition.

It's a physiologic treatment basically. And as a result, it doesn't matter what the condition is. It's going to have certain physiologic actions in the body. And based on that, it's going to elicit certain responses and benefits.

And once you start doing magnetic therapy you realize the value that it has across a whole range of health conditions. So that's the story till now. – Wonderful.

What PEMF Is and How It Differs from EMF

Well, thank you for that back story in our topic today is to talk about how pulsed electromagnetic fields or P. E. M. F. S. Can impact bacteria such as the gut micro flora can help with restoring physical health. Can also have an impact on mental health. And as you brought up the lack of research and then the growing body of research that actually was already there in Europe and then had begun to become more available in the United States and in the West in general.

I it dawns on me that the transcranial magnetic therapy research of is cutting edge right now at Stanford. And people are looking at things like some of the most promising depression treatments utilizing magnetic therapy.

So describe for the audience what is pulsed electromagnetic field or P E. M. F. – Alright, So people, a lot of people are worried about five G and four G. And six G.

Or whatever is going to come down the pike. Those those are basically wavelength fields. They're basically broadcast into the environment and they do have a wavelength to them. And so they're called E. M.

S and they can be absorbed by the body. The wavelengths are extremely tiny and when they get absorbed, they cause damage. So that's a big distinction between P E.

M. S. Which are pulsed magnetic fields as opposed to the electromagnetic fields that are more waveform based. So pulse magnetic fields are generated by current flowing through a wire.

And we call that the right hand rule. So my thumb is the current flowing in the wire and perpendicular to the flow of current. You produce a pulsing magnetic field, which is my fingers and it goes right hand perpendicular to the flow of the electric current. That pulse is then, And that current sweeps out and comes back, sweeps out and comes back. It's a closed loop E.

M. F. S. A broadcast in the environment. So they're open loop. They go on to infinity, essentially. Right, so magnetic pulse magnetic fields are designed for body for the body, for use of the body, E M F S R.

Designed for communication. They happen to have effects on the body if you happen to get in the way of one of those fields especially. But so they're very different and they're they're not therapeutic, they're not designed for that purpose. Where, whereas PMS are designed for this purpose, so PMS are much safer. Extraordinarily safe.

Now you can have PMS that are designed to burn tissue and we use them for ablation purposes in the body killing, killing nerves, burning warts, healing cancer changes cancer cells and so on.

So that's a whole different ball game in terms of PMS. But what we're talking about then is basically very low uh rates, pulse rates. So they're pulsing very, very slowly as opposed, extremely rapid rates, which go along with the microbes, et cetera.

So these are very safe magnetic fields and you can design them to penetrate the body at various depths. And you can have local treatment devices, you could have devices to treat a big section of the body like a chest or belly.

Or you can have devices that treat the whole body. The legacy of PMF therapy is basically whole body treatment using very low intensity magnetic systems. So those are legacy devices, they've been around for 25 years, but they've been superseded as you say now by recently more recently by the very high intensity devices. So those very low intensity devices ghost is a measure of magnetic field intensity. So G. A. U.

S. S. So one the earth's magnetic field is about one kaos. These low intensity magnetic systems are one Kaos. So the Earth is half a gauss I'm sorry and these are one Gauss. Our TMS or transcranial magnetic stimulation is 10,000 gauss. And even those devices to the brain are considered incredibly safe. So now we have a well know and often therapeutic and they're used not only for depression treatment resistant depression.

They're used they're not being studied for all sorts of things. Parkinson's M. S. All kinds of brain lesions, all kinds of neurological lesions. But even tissue healing in general.

– And with unheard of kinds of results from any other therapy known at this point. And it's pretty amazing. Before before we go too deep into the PMS.

I do want to just on the E. M. F. And the health detriment aspect as many people have heard about. Well I should be careful about my cell phone too much use and sleeping with it right by the bed and wifi routers on at night and these kinds of things with E. M. S. And so can you just speak to a little bit more on that piece in terms of there's what what's happening there.

There's some data on calcium channels. And there's a look at potentially increasing certain growths of maybe mold or bacteria, what's what's your perspective on E.

M. F. Problematic kinds of VMS potentially for health and what's the mechanism there. – They largely work through the same gate channels, sodium and potassium pumps.

The calcium channels in the body. Calcium is a critical factor for PMS to be able to be effective as you're driving calcium. You're restoring cell membrane potentials or balance of cell membrane, electrical charges of potentials by the gates by the calcium channel.

So E. M. S do the same thing except for their high frequency. And so the key with E. M. F. Compared to PMS. So some of some of these are the same is the dose. So if you're standing in front of a microwave tower that's broadcasting you're getting cooked.

That's the whole principle behind the microwave oven, your cooking, you're heating right, It's supposed to do that. Now. Obviously if you're standing microwave that's for cell phone use, it's not you're not supposed to stand in front of that kind of beam if you will right of radiation because it will cook you too. So you shouldn't, one of the things, one of the ways you find out if your microwave is leaking is to put your cell phone a microwave and then call it if it dials it's leaking.

So you should have should throw that microwave out and get a new one. So again very different. And because it's the same kinds of mechanisms, but in a much higher dose ng and concentration, the key is really the amount of dose.

So having a cell phone by your bedside cell phones by the bedside produce a stronger signal broadcasting than they do receiving, but they still produce a signal there on all the time.

EMF Exposure, Dose, and Health Risks

So a wifi router is on all the time. Although in Europe they now have demand routers that only turn on when something is coming in. So the key is the dose. If you have a microwave router in a sense next to your bedroom, that's a what they call those for power lines, those they broadcast all the time, how much electricity you're using.

Right, Exactly correct. So smart meters are a problem because they're broadcasting frequently and they're pretty powerful. They have to broadcast at a distance. And if it's next to your bed on the outside of the house, you're getting that radiation.

So that the problem there is cumulative damage. And if you get, if you're dozing is remote and distance, that's not as bad. But holding a cell phone to your head, you can clearly see when you have a cell phone to your head, take it away from your ear and see what your ear looks like is bright red.

You're essentially cooking your ear. And that's why people who have cell phones to their heads over long periods of time can develop acoustic neuroma, in other words, you can get brain cancers on the side of the head to which you're holding a cell phone constantly. So as much as possible, remove the source, decrease the amount of radiation exposure, preferably do not live in the line of sight of a microwave tower.

But if you're far away from it, that the dozing is not significant enough, and often the body can sort of compensate for that. But if you are particularly vulnerable or if you have a tumor growing, there's a possibility that that microwave could stimulate that that cancer that tumor, so PMS can actually offset a lot of the damage caused by E.

M. F. Because PMS enhance the body's health. So if you're using magnetic field therapy on a regular basis, therapeutic magnetic field therapy on a regular basis, you can offset the damage caused by these low level chronic sort of exposures that you get.

So try to avoid E. M. S. As much as you can decrease, minimize exposure. Don't have a cell phone to your head. Do the speaker use a remote connection, even the ear pods emit microwaves, essentially bluetooth emits microwaves as well.

So decrease the use the speakerphone if you can, and then at night do not have it in bed next to your bed or put it on airplane mode. There's really no reason to have a cell phone next to your bed. Really, honestly, unless you're waiting for an emergency or something. And then if you're a crazy doctor that's got it on all the time because you're on call all the time.

Well God bless – and simple solution for wifi routers are even just a little timer. The plug timer that you can set it to go off between midnight and six a.m. Or when no one is going to be using it.

If no one's using it anyway then no need to keep it on. So some people do that. And that's another low hanging fruit of a simple way to set it and forget it with reducing at least the exposure during the sleeping window. Which can be a rejuvenated time.

That can be helpful for people to have a reprieve from that ongoing output that's occurring. – And your router far as far away as you can from your sleeping area. – Yeah. and you mentioned this sense that the dose makes the poison as another way to say it. That things that are good for you and too much quantity often aren't even water and and things that aren't good for you at that.

Some small low dose can be for medical, lot of people don't know this but many of the things that are called antioxidants when it comes to things like green tea for example.

It's actually a mild pro oxidant but it tells your mitochondria to make antioxidants in order to deal with that mild pro oxidant. And the net effect in the body is an anti oxidative effect because of a hore medic stress from a low oxidation. And this may be similar in this context.

– From that perspective. Yes. CMS at a distance can be hermetic. – And the PMF. Tell us about the mechanism there with PMS. And is this is P. M. F. A. Hermetic stressors different mechanism.

Or how is this working? – It can be, in a sense. Hermetic at the low dose is very low doses. So theoretically again, those one goes whole body systems are not doing enough in the body to be able to do healing work. They still have sort of indirect effects in the body and one of the indirect effects in the body.

This is how I started my journey. Was was like acupuncture stimulating the acupuncture system which had been discovered now to be instead of key its charge.

So it's actually a current that's flowing through that whole meridian system. So you can activate that with the one goes magnetic field but it doesn't work deep enough strong enough to often do healing work. So for example, PMF devices that have been FDA approved for healing fractures are about 16-18 Gauss.

But because they're so low in terms of intensity, they have to be used for hours a day in order to get the healing response in the body. So, in that sense as well, even at that level, it may be somewhat dramatic.

But what we look at when I look at the most is that you need to have at least about 15 Gauss at the cell membrane at the dentist scene receptor in the body to optimally handle inflammation. So the identity in receptor is used by the body for chronic inflammation. But research has shown that you need about 15 goals to have an optimal effect on that receptor.

And then you have to judge like radiation therapy, you have to judge the dose uh based on where you're trying to deliver the dose, the intensity of the starting dose in order to deliver the right dose at the tissue. And we have we have a table on drpawluk.com about the identity and receptor and this one in the supercharger health book as well.

It says here is the magnetic field intensity you need based on the depth that you're trying to treat in order to activate that identity in receptor. – When you're talking about activating the receptor in these devices.

So give people a picture for are these devices handheld devices, maths, I know there are so many different PMF devices, some of which are more or less portable, some of which are intended for certain kinds of therapeutic interventions, some of which are handled typically only in professional offices, some of which are available to consumers. So before we dive into how the PMF affects the microbiome and mental health and specific conditions.

What are these devices? What do they look like? And what are the options for people. Just to give them a framework to understand what we're talking about here.

– So rather than spending a lot of time getting into that detail here, I'm going to recommend that people access resources. So one resource on drpawluk.com, that's D R P A W L U K dot com is a product comparison guide. So on the home page on the right side, you click on product comparison and you'll see a whole host of devices around the range that you talked about. Very local, very low intensity, broader intensities, higher intensity, shorter, smaller areas of treatment.

PEMF Mechanisms, Dosing, and Device Types

And in the supercharger health book, I have tables that show you the different conditions and even the different actions of magnetic fields and which kinds of magnetic fields are going to impact those, to what extent that gives you a better sense of how to choose a system. So if you need to make figure out how to choose the system, then

supercharge your health. The book becomes the best resource for that.

And they all have different benefits and actions. So you have to decide. Am I treating a tennis album okay? Or am I treating a brain across the brain? Or am I treating a gut?

The whole belly. So if you take, if you treat, you know, a small dollar sized area of the gut, you're gonna affect only a small area of the microbiome. There are cascading effects as well but their their way downstream. So they tend tend to be as potent as what you end up having, you know very locally.

My usual recommendation for most people. So most of people who are listening, we tend to as a society tend to be focused on a particular problem with a particular solution so that goes back to the medical paradigm. However, that may be the reason that you seek to get a PMF system, but on the other hand, PMF systems help the whole body.

So should you be looking only at a local system or should you consider for yourself? Whole body system because who doesn't need help every day? Right. The the metaphor or the image that I use is we have 100 trillion cells in our bodies, let's say more or less.

And every single cell has thousands of biochemical processes per second. So how much treatment do you need? I don't know. Right, we don't know. So we try the treatment to see if it works back off, see if we lose benefit.

So it's going to have to be a trial and error process depending on the problem you're trying to treat and the mechanism of action that you're trying to invoke if you will in the body.

So it can be challenging to try to get the right equipment for your problem. And as a result what we do is drpawluk. com. We offer consultations So people who are serious, they don't want to spend $20 for a machine. You want to spend $20.

Don't bother calling me. You can go to you can go to the store on the website and figure out what you should have. On the other hand, if you have a serious problem like Alzheimer's or you have a serious problem like M. S. Or schizophrenia or depression, major depression then yes maybe we need to have a discussion about what's best for you considering not only your local problem but also what your whole body needs are going to be, especially over time because once you buy one of these machines machines you tend to buy for the rest of your life hopefully.

– And when you're talking about general health and the need for it, when we have the centers for disease control even as a conventional organization, very conservative in their statistical analyses, saying six in 10 Americans have at least one chronic disease and four in 10 have two or more chronic diseases.

That's a majority people who conservatively have one known chronic disease. How many have chronic diseases that are yet to be diagnosed unknown. And we have to wonder how much support that's needed.

And part of this boils to what are the exposures and what's the mismatch between, how we're genetically predisposed and what the environment is today.

There's been a tremendous amount of environmental changes in terms of things like E. M. F. Exposures, toxin exposures, stress in terms of indoor toxins like mold talk in terms of even things like lights and the frequency from lights at night and things that historically our genetics didn't evolve for.

And so when we're dealing with a mismatch between genetic predisposition and environmental exposures and the what we're living in today that there is some need for support and some of that support can be nutritional some of that support can be supplementation so that support can be good sleep hygiene practices stress management practices meditation practices breathwork, cold exposure.

And we've gone over in the talks in this summit many of those areas in great detail. So it is nice to also consider what are some devices, some things that can augment that all those other things that you're doing and help in a different way from different mechanistic perspective. So with relation to mechanism in relation in particular to gut

microbiome and mental health. Since we're really talking a lot about microbes and mental health, what are some of the mechanisms for PMF devices in relation to the gut microbiota and then also to mental health concerns. – Well from my perspective gut microbiota is a bidirectional issue if you treat the brain you're gonna affect the microbiota. If you treat the microbiome, you treat your belly is going to affect the microbiome which clearly is going to benefit the brain or the rest of the body for that matter. Right?

So either way, and one of the aspects of the microbiota as well is what's causing the problem with the microbiome. Is it because it's the antibiotics?

Is it because you're eating chicken with antibiotic loaded with antibiotics? Is it the other food or other aspects of food that you have that basically contain molecules that are similar to antibiotics and are back to recital or at least modify the bacterial populations.

Magnetic fields don't do the kind that we use for our purposes, unlike the ones that burn tissue are basically more of a field effect than a direct cellular effect on a mic on on a bacterium. But there's there is research that shows that PMF therapy can impact individual bacteria fact PMF therapies have been used to Clearwater.

So contaminated water with bacteria, you can do magnetic therapy to help to clear that water and we know that. So you can do that in the environment. So can what can you do in the body with that, that kind of thing has not been studied extensively in the body. But we do know that PMS have an impact on microbiota. But what I think probably more than what they do directly to the microbiome, what they do is to create a better environment.

So if you create a better environment in the belly where the microbiota live, then that does not, that's that's not a contributing factor to the imbalances that you get in the microbiota.

And so as a result the body becomes healthier. One of the key mechanisms of action of magnetic field therapy is to produce charge in the body through a mechanism called Faraday's law. So Faraday's law, magnetic induction and magnetic fields passing into the tissues and passing into the body create charge.

They create the production of charge and the body creates that charge. So what the magnetic field is doing it passes through completely ignores the body.

The body does not exist to a magnetic field but the magnetic field exists to a body. And so as the as the magnetic fields passing through it causes the body to produce charge because of the interaction of ions and other charge carriers in the tissues and then you produce more energy and then that causes all the downstream consequences.

The value from that PMF therapy so healing crones disease healing, irritable bowel syndrome, healing. Post op wound helping to create a healthier environment so that you don't build cancer cells so they don't grow. And this is where the prevention aspect of PMF therapy comes in. There's a huge usually a very long lead time for the development of a lot of health, chronic health issues, right? They don't become chronic usually overnight.

And if they become chronic after an acute injury, it's because they didn't fully heal from the acute injury and PMO therapies if you're dealing with an acute injury.

PMF therapy can help that injury heal faster. Be more stable and not become chronic. So it doesn't convert to criticize. So again it helps the microbiome both directly but it also helps it indirectly.

And then in terms of the brain. So basically you improve mood by changing the microbiota and that's an extra microbiota and the microbiome is extraordinarily complex.

Right? And you can't say you should only have one bacteria, you should only have 10 or should you use 10 billion of this particular probiotic because that can be overkill as well because imbalanced but treating the brain, treating the vagus nerve also changes the microbiome and studies have been done so, magnetic field therapy, as you were saying, affects the brain improves brain function locally. But then secondarily the whatever secondary effects there are in the microbiome further help the primary effect that you have with the brain directly.

– So how does the charge the charge you're mentioning? The charge? And that charge being a mechanism by which the body is generating energy and regulating.

How does that charge impact the is it mitochondria? Is it the aspect of inflammatory cytokines? How how is that impacting and interfacing with the physiology?

– So chemotherapy has said affect at least 25 different actions of the body. No one. They reduce swelling. Oedema. Oedema is a natural consequence of injury, Increased circulation stimulate a TP between 100 to 400% increase in a teepee production.

They stimulate stem cells. They stimulate repair mechanisms in the body. Their antioxidant as well in terms of their actions anti inflammatory, we mentioned and of course they do have this whole body acupuncture effect as well which causes balancing or homeostasis in the body. So some of those actions are very direct.

PEMF for Brain Waves, Entrainment, and Mood

Some of those actions are very indirect, but they're all there at the same time and they don't I can't dial it. So the give the body the energy and the body says, okay, I've got more energy now I'm gonna do what I need with this energy.

So if the energy requirement that it has at that moment happens to be to decrease inflammation or happens to increase nitric oxide, happens to rebalance the immune system that happens, work through the receptor the body will take from that energy whatever it needs at its own rate, at its own pace. And then you just have to dose often enough to keep that process moving until it's culminated or completed.

– Now, when we're talking about whole body versus targeted, I know some of the studies on the brain are looking at stimulating certain areas of the brain and others may be more general in their application as to looking at how PMS and magnetic fields of various kinds can impact brain function may be swelling, inflammation and other aspects that you're bringing up as well.

Where would you say the difference is in terms of the targeted versus more broad spectrum application in relation to mental health disorders such as depression, anxiety or other mood distributor rations. – I have a problem with targeted because when you introduce even with the our TMS systems, what they do initially is they stimulate the motor cortex and to get a hand contraction. They say that's the motor threshold And then they moved over to the left frontal area of the brain and increase the intensity upwards of 120% of the motor threshold.

The goal there is basically to create um charge production, create current in the tissue. Because what they're doing, the reason our TMS was developed was to replace E.

C. T. Electroconvulsive therapy which is barbaric, it's electrocution right? But our TMS is not is not painful but it can produce energy in that area.

The hope or the thinking there is that by increasing the energy in the prefrontal cortex you're going to reset a lot of the chemistry of the brain. There's a guy called Leuchter L. E U C H T E R who wrote a paper called basically it's a balancing mechanism in the brain and he says it's not about the receptors, the chemical receptors, it's about the electro Magnetics and the reason PMF.

The reason medications take up to two weeks or three weeks or four weeks to kick in is because they're gradually cascading the amount of electromagnetic energy production in the body. So it's called rhythm and blues is the name of the paper rhythms and blues.

So now psychiatry is beginning to understand that that E. C. T. Treatment or that treatment of the brain here is more than just synapse management with biochemistry is all electromagnetic. And how do you separate one from the other?

And so when you treat here does the magnetic field stop where you're targeting? The answer is no because magnetic magnetic fields go right through the whole skull?

Right? So you treat a magnetic field here, it's going to go into your shoulder too. At the same time. It's not going to be limited to where you where you think you're putting it.

So targeting can increase the intensity and the density of the stimulation but it's not limited to that. So there's a discussion some discussion in the literature now about what's actually happening in with treatment treating depression.

Is it really that again our tms specifically that area of the brain and the answer clearly is known. It's not that specific. So you can focus that area, you can focus the hippocampus right?

For for short term memory. You can focus um frontal lobes for executive function and executive memory. You can focus for a calcula where you had problems with mathematics, you can focus on that part of the brain but you're not just treating that part of the brain.

You're concentrating the energy in that part of the brain So if you do QUE E. G. You map the brain with Q E E G. And you can say well this area of the brain, let's say back here, this has doesn't have enough alpha, it's got too much delta.

So let's stimulate this area with alpha. In that case you're going to use magnetic field therapy where you can induce alpha where you can specifically target the alpha brain waves and you're gonna use frequencies or pulse rates that are in the alpha range.

If you want to say for sleep, I use magnetic field therapy for sleep all the time. And sleep is very important for depression and mental health as well.

So we what do we use for sleep? Delta? I will do DELTA under the pillow and run it all night long. So we bring the brainwave hyper function down, keep the brain more suppressed through the night. So you get much deeper, you know, more prolonged sleep. But that has all kinds of secondary benefits as well. Which is a good thing.

– So when when it comes to targeted there's this sense of that, we're targeting one area. But of course the magnetic field doesn't stop there. So we know it have its having a broader effect than just one area may be stronger in one area that's targeted but still a broader effect when it comes to the brain waves themselves and looking at for example, Q E. G. The pulses when it comes to the PMF the pulsed part can be impacting those brain waves at the rate the wavelength.

And for people who aren't familiar with this Delta. Is that lower one that is sleep? That's 0 to 1 hertz. That's the brain waves going into this deep sleep.

Then there's theta which is in between sleep maybe dreaming or deep meditation and then there's alpha which are relaxed states or in between often sleeping and waking where people who are going into very creative modes of work often are in alpha and some meditation and in beta being normal waking awareness and then gamma being a whole another thing where some some healing is occurring. So are these coming into play with pulsed electromagnetic field therapy – Totally, totally. Most of the therapeutic PMS are not designed really for entrainment of the brain, which is what you're talking about.

Well we present the brain with a pulse and the brain is very dynamic. And so if you're presenting it like a metronome with a specific pulse rate continuously, the brain starts to listen and the brain does what's called frequency following, which then leads to the entrainment.

So audio visual entrainment can does the same thing. Audio or audio or visual entrainment. And what we're doing now with Magnetics is we're doing something called audio magnetic entrainment.

So the new term your audience is going to hear. So with audio magnetic entrainment we do the same thing because these oscillations moving back and forth in the brain and then the brain begins to frequency follow into that into that pattern.

But then you're getting not only the entrainment benefit, but at the same time you're getting the magnetic therapy benefit, so you're getting more going on there than you do just with audio or visual.

– And so with entrainment. Are is that a something that are the pulses sometimes varied so that it won't n train and follow or are they usually constant and – intended to drive the brain rhythms to follow? That's an extraordinarily important and very observant observation.

So that's one of the things that I have struggled with as well. And I've done a lot of audio visual entrainment. There are people who designed PMF devices for brain entrainment but they're changing the frequencies constantly.

And so what happens is you don't know whether you've been trained enough or you haven't. The machine is moving on regardless of what you're doing. So which is one of the reasons I like Delta and train Mint.

one of the devices we have is the flex pulse and the flexible has a DELTA program. It has an ALPHA program, data program and so on. So if you do Delta entrainment, then you're taking more of the brain to go into delta.

You can't get the whole brain into delta where the brain is damaged, it's gonna be damaged to be an alpha base and you know all delta, you're gonna be in a coma, it's all delta. So you're getting more and more of the brain to be encouraged to be in that brain range if you are.

Um So it's not comprehensive and that's a good thing, It's a safety mechanism. But you but again, you're trying to encourage as much as you can, you get multiple actions, multiple ways that it becomes and trained.

The brain is very dynamic. And the good thing about it too is if you take it off rain will go back to doing whatever it wants. I'll give you an example. I had to pick up my daughter at the airport at 2:00 AM, her flight was supposed to come in at 8:00.

And so I had to work the next day. So I, what I did is I took my flex pulse and put it on Beta 23 hurts back of my neck over the ras particular activating system for consciousness levels, right? And I drove to the airport picked her up, I was fully wide awake. I was not jazz, that was not hyped up, but it wasn't like coffee. And then when I came home I took it off and it's like almost instantly I went to sleep. So there's very little residual effect of the brain with, depending on where the brain wants to be, Your brain wants to be in alpha. But you put it in delta while we take off the delta, the delta break. The brain is going to go back to alpha.

– I think some people do get concerned with controlling things that naturally might be different. But also people get stuck. People get stuck in patterns of depression, patterns of anxiety, patterns of chronic illness and this is almost a homeostasis that the body begins to habituate around that pattern.

And you talked about reset. You also talked about this ability for the body to be able to go to what's natural, but then in train to something specific and intentional. So for someone who, they're trying to understand a little bit about, hey, I'm just, my mood is off. I'm feeling depressed.

What what can this actually do for me? Does it pull me right out of it? Does it take time? How does it, how's the experience of someone who's beginning to utilize post electromagnetic field therapy?

Obviously everyone's a little different. But what's a, what's a general sense of someone starting to use this therapy and they're starting to see an effect. How does that tend to look?

Is it gradual? Is it quick? Is it a combination? It's – Yes to your questions. So the answer is the farther you are from where you want to be the father, you have to come?

That may mean in order to do that fast? You're gonna need a much higher dose now.

Whole-Body Health, Microbiome, and Water Applications

They're going to be a lot more magnetic field intensity to drive the brain or you're going to need a lot more time. So it's either time or intensity it's going to cause it to go. And then the farther you are from the object, then the more work you're gonna have to do. So in some cases if you're in Alpha already and you're trying to get the data, that's easy.

If you're in beta high beta, you've just been doing quadratic equations and watching videos on all kinds of stuff that your brain is really working hard to do.

But you're overstimulated then that is going to take longer to get you down. That's why we do sleep hygiene. Right? Gotta set yourself, set the stage for this, that you set the stage and that may still not be enough. Then it's just an easy push down to go down to the next level where you want to be.

So the answer is it's situationally dependent if you've been taking speed, if you're on speed or coke and you try to fall asleep, you try to go down into Delta is going to take a lot more work to get there. – Yeah, that's a good analogy.

So pulse CMF or PMF devices say a little more about the with with or without the devices. What's what are some of the main core tenants or principles that you really encourage in yourself or patients or people you're working with to keep in mind beyond just PMF devices, what other areas when it comes to mental health and gut microbiome health do you encourage for people? – Well, one of the key things that I maintain always you can't build a house without bricks and mortar, right? You need nutrients, you have to have the proper nutrients support. You can't be pouring gasoline on fire and throwing water on the fire and see which one wins.

Right, ideally you're you're working in concert with everything else you do in your life. So don't overstimulate yourself, have a good have a proper balanced diet, get a reasonable amount of exercise and activity.

So magnetic field therapy will make anything else that you're doing work better, whatever you're doing with nutrition, whatever you're doing with counseling or whatever you're doing with activity. Running for example, running can be very damaging to the body. It's you know, marathon running is probably not very balancing in general, right? Or training for that.

So if you do that, then you're gonna have to do a lot more again, work to pull yourself back. But balancing is critical. You can't heal a wound without having nutritional factors to support the healing of that wound. Get heel heel bone or reverse osteoporosis.

If you don't take minerals to support bone development, magnetic field therapy doesn't create the minerals and so you have to again use balance and then you have to do enough treatment time. Probably the biggest mistake that people make is they don't do it enough there unfortunately there are magnetic therapy sales people out there that say all you need is eight minutes a day, Good luck eating one peanut a day.

Is that going to be adequate nutritionally eight minutes a day. The the bone healing machines that we talked about for fractures, they have to treat for nine hours a day.

And then she did studies that show that if you don't treat what they recommend you treat what the science says, this is what you need to heal. Then it takes you 2-3 times longer to do the healing work. So again, balancing and having all these factors together and this is the supercharger book talks a lot about these kinds of factors and what you have to put together to get the best effects.

– Now aside from the body effects of PMF magnetic field therapy, there are people who talk about magnetize ng water utilizing magnetic fields in contexts outside of just the body. Can you speak to any of that as any of that things that you feel are valuable and important for people to know about.

– I do recommend treating water and if you own a magnetic system already and go out and buy activated water if you wanted to and you're going to pay money for that.

But if you have a PMF system, all you have to do is to put your water right next to the magnetic coil. How long does it take to magnetize a paper clip almost instantly.

So you don't have to treat the water for very long Russians. The Russians have discovered that you can melt gallstones. I haven't seen that yet. So I'll take I just I heard, I heard that you might be able to melt kidney stones by using magnetic water on a regular basis. If you think about it, water molecules themselves clustered and there are things called aqua pores in ourselves.

So the water channels and ourselves, which are extraordinarily tiny, you can make water slippery. Or they've done studies where they've shown water and pipettes a column of water falling down a pipette time that and you can't do distilled water with this. The water has to have mineral content, But the water is normal water and you treat them treated with a magnetic field, it will fall about 2-3 times faster than it would normally fall.

So there are definitely effects with water. Water tends to be more softened when you treat the water. So you can use that in cooking. We've definitely seen experiments where people are using water for their plants and you can have a plant here and a plant here. One gets magnet magnetically treated water and one doesn't, the magnetically treated water plant grows faster and bigger.

So that is an important thing. We don't spend a lot of time talking about the use of water for that purpose, but that certainly could be a maintenance thing.

You can treat the water once a day. Japanese researcher discovered that that the relaxation effects of the water molecules being closer or farther apart, don't last all day long.

So you can only make that water for that day. You can't use it for days and days and days. And ideally you treat it and you can use about six or eight hours and then you have to re regenerate. But yeah, if you're on the machine already – Adding water, wonderful. – And what does it do to the water in the body?

– Exactly, yeah. Yeah. Well this has been wonderful. I think that gives people a broad context for the difference between E. M. S. And P. E. M. F. And how PMF devices can be targeted and or generally applicable for a wide range of purposes with many different mechanisms of action behind how they work.

Can you be utilized on the body and can be utilized for water as well? How would you like to summarize, review any any other pieces that we haven't mentioned yet, that you want to be sure to mention here before we wrap this conversation.

– One thing we didn't really talk about a lot uh is safety and we already talked about tMS RPMs and you're treating the brain with very high intensity magnetic fields for like 20 minutes or 30 minutes at a time and you do this daily for weeks.

So the safety studies and our TMS have shown that is extraordinarily safe even to the brain. One of the reasons that FDA doesn't pay much attention to magnetic field therapies.

And we don't have a whole lot of FDA approved devices. Which is a good thing I think is because it's safe. If it was not safe then you know the FDA would be all over this technology.

So safety they're very very safe. It's very hard to overdo it. There is one caveat potentially and I've mentioned this a couple of other summits. The caveat is that if you get the urge to put on a cape, don't try to jump over anything tall.
– So safety is an area anything that people should avoid any conditions.

Any bodily if they have joint replacements. If there's a pacemaker, these kinds of things are these concerns with magnetic field therapy.

Safety, Contraindications, and Where to Learn More

– So if you have a very high intensity system you have to be a little bit more concerned when you have metal in the body. You should be doing magnetic field therapy if you have a joint replacement you should because the joint replacement is a foreign body which creates inflammation in the body which then causes these joint replacements to have a lifespan. If you're doing magnetic field therapy on a regular basis. It causes osteo integration.

So it means it's actually better for the body pacemakers are pacemakers implanted defibrillators. Cochlear implants and you know all the electronic stuff that we're now seeing can be a problem.

If the devices are em are conditional you're probably pretty safe. However if the device has to be recalibrated, reprogrammed to go into an M. R. I. Has been turned off to go into an M. R. I.

And then turn it back on again after you do your M. R. I. Then you probably should be keeping magnetic fields away from that control unit by at least a foot two ft.

So there's a there's an area where there's a lot of discussion about the role of PMS and whether they can be safely used beyond that. It's a matter of time using it just using it the right amount of time using it the right way using it often enough for your problem.

– Well thank you Dr. Pawluk this has been very informative in another edition. That's very different than some of the other conversations that give people another tool because there are some people who are quite sensitive to supplements and entry changes or who have already done a lot in those areas. And this is another different area that people can utilize and can complement. As you mentioned all the other stuff it doesn't replace it but if you're doing all the other stuff and then you add this it can complement and be helpful addition. How can people find out more if they'd like to talk to you learn more or get investigation into a device.

I know you've already mentioned your website and the book are those the best resources. The best places for people to go. – Yes. Often when people want to do consultations we give them a document that they have to fill out. We recommend that they look at certain articles on drpawluk.com. So I don't want to be educating somebody who should have educated themselves.

Right? So in other words if you spend the time and resources your own time and learn about magnetic therapy and then contact us and we can we can have a better dialogue will be much more efficient.

So drpawluk.com you can get consultations. The two books I recommend if you read the book you don't need to read Supercharge your health. You don't need to read power tools for health because it's got more science. So if people don't like to see the science they say okay that's fine I accept what he says. But then go to supercharge your health which is much more practical.

Or again the combination of the two books if you do that read through what you can on the website, the website has a huge amount of information. It's a big library all by itself. But at least the basic things and then the two books and you're well on your way to understanding.

One of the key things about magnetic field therapy again is that don't be fooled into thinking that a low intensity magnetic system is going to do the job when you need a high intensity system. And that's why the supercharger health book becomes important, Right? And you can spend $6,000 for a machine.

That's there's almost nothing for you. But the sales person had a great song. Great story. – Yeah, that is important. Well, thank you so much. Dr. Pawluk your wealth of information, especially as it relates to PMF. And thank you everyone for watching.

This has been another episode of the microbes and Mental Health Summit. Take care and have a wonderful day.