Exercise and Blood Flow to the Brain Transcript

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Introduction to Exercise and Brain Health

I hope you've enjoyed day five of the Reverse Alzheimer's Summit as much as I did. There is so much great information today, and I want to share a little bit more about what we do at Miramar to facilitate brain stimulating activities and in particular, exercise.

I'm going to share with you the four different types of exercise that are critical for getting brain health through blood flow, and also all of the other amazing benefits of regular, vigorous physical activity.

So first of all, I want to say walking is not enough. I'm always excited when my patients tell me they walk. They've got a dog. They take their dog out for a walk a couple times a day, but it's just not going to be enough to reverse the pathophysiological changes that are happening in the brain.

So what I'm sharing with you right now is part of our Marham at home caregiver training course. So we know that, it's caregiving is such a hard job. And at Miramar, we have created an immersive experience and this protocol developed by Doctor Bredesen that we know reverses cognitive decline.

And what I want to do, because we we frankly don't have enough beds around and we don't have enough space for everyone who could benefit. And also, I know how important it is to keep our loved ones at home in the fabric of their family, their community, their work, their lives, rather than moving to a place full of strangers.

So to meet that end, I have developed this Marham at home caregiver training course and tonight I'm going to teach you the module on exercise. So when we think about foundations for health we know this is sort of common sense but again not common practice.

We know that we all foundationally to be healthy be plenty of good nourishment. And yesterday we talked about that ketogenic diet. And especially great if you can get an organic ketogenic diet with lots and lots of veggies.

We talk about sleep rest. Exercise is what we're going to focus on right now. We also know that deep personal connection and stress management and love that we talked about on day two, and then that sense of adventure, keeping things fresh and exciting.

And we can do some of that through exercise. So the science lets us know that those who exercise versus those who don't have better cognitive function.

So this study showed that among patients with dementia or mild cognitive impairment. So even with dementia, even with a diagnosed dementia. So this is more progressed random controlled trials documented better cognitive scores, 6 to 12 months of exercise after 6 to 12 months of exercise, compared with people who didn't exercise or who were sedentary.

So this is magic, right? If we could bottle exercise, there wouldn't be dementia.

Why Exercise Matters for Cognitive Decline

What we want to do is make sure that regardless of that phase of diagnosis you're in, whether it's subjective cognitive impairment, maybe even just genetic risk, where you're concerned about this happening later and you want to prevent or if you have mild measurable cognitive impairment or even diagnose Alzheimer's, the more you move, the better.

And we'll talk about ways to do that. So the benefits of exercise. This comes from a meta analysis. So this this paper that I'm referring to here is a meta analysis which means it's taken a bunch of other research.

And then it puts it together to see if we can be more confident in the conclusions that we're drawing. And so this is at the tippy top of the type of research that is most validated.

That is, it has the most compelling sort of conclusions. So what it says here is that randomized controlled trials. So RCTs again this is at the top of the research hierarchy.

When you can randomize and control a trial, you can draw more conclusions and be more confident in those results. So with randomized controlled trials of aerobic exercise and healthy adults.

So this is people who do not have dementia. Yet healthy adults were associated with significantly improved cognitive scores. So when you take healthy people and you have some of that exercise and some that don't, you see that those who exercise are sharper.

They do better cognitively. After one year of aerobic exercise and a large randomized control trial with seniors that was associated, exercise was associated with significantly larger hippocampal volumes.

The hippocampus is a part of the brain that controls memory. That's responsible for memory and better spatial memory. So this is where we are in space know remembering where things are.

Cross-sectional studies similarly reported significantly larger hippocampal or gray matter volumes among physically fit seniors compared with unfit seniors.

Right. What do we want as we're aging? We want more cognitive reserve. We want bigger brains. We don't want them shrinking or atrophying. This is associated with poorer function, poorer cognitive function, which in turn can lead to dementia and the loss of independence.

So what we want is to exercise to get this brain cognitive network studied with fMRI. This is functional magnetic resonance imaging display to improve connectivity after 6 to 12 months of exercise.

So when we take the brain and image it, if you've ever been in one of those MRI machines, they're kind of claustrophobic. But when you get in there, we can get some amazing data, particularly on the fMRI.

So we can see what's going on with the connectivity of the brain. After 6 to 12 months of exercise, it's improved in those who exercise. And we can see that we're starting to connect the dots between how exercise is so helpful and then in animal studies different from human studies, but certainly in animal studies, we have more flexibility because we can be more cruel to the animals than we had to humans.

So, we can dissect them. They also have shorter lifespan so we can get more information about the whole, their whole life. Expectancy, their life history without having to wait 80 or 90 years.

So animal studies indicate that exercise that facilitates neuro plasticity, this neuroplasticity is one of these concepts that has become much more popular in the last 5 to 10 years.

And the idea is that our brain contained for a long time we thought, oh, our brains don't change after 30, 40 years old. But no, in fact they can. And exercise facilitates that.

That's what we want. We want our brains to be malleable, to be changed so that we can choose those tracks, of brain function so that they serve us into our 70s, 80s, 90s.

And neuroplasticity means new memories when we can change our brain, we can create new memories. We can draw on those old ones. And, this is all happening via a variety of bio mechanisms.

So there's multiple ways that this is happening. So multiple things that are going on in the brain that help to facilitate that neuroplasticity when it's when there's exercise involved with improved learning outcomes.

Don't we all want to be able to remember how to do that. Remember how to use our our new phone. Remember how to, you know, get somewhere new. Remember a new recipe.

We all want to be continuing to learn our entire lives. This is what makes life exciting and adventurous. And so getting exercise helps that the induction of brain know.

Neurotrophic factors by exercise has been confirmed in multiple animal studies, with indirect evidence for this process in humans. So we don't know for sure, but we have a pretty good hunch because this is confirmed in animals that this is also happening in humans.

So what is it that's going on? Neurotrophic factors. The induction of neurotrophic factors means that we are stimulating the signaling, going to the brain to tell the brain to build more neurons to grow.

And this is what we want. If we want, we want bigger brains, we want more connection. We want more memories. We want to be able to go back and find those memories in the brain as well.

Find those words. Remember how to get places. That is the goal of anything related to improving cognitive function and exercise does it as well as any other one of these interventions, if not better, besides a brain neuro protective effect.

So we have neuroplasticity, which is brain changes coming from exercise, neurotrophic induction, which is signals telling the brain to grow.

Aerobic Exercise and Heart Rate Targets

And then we have a neuroprotective effect of exercise. If we could bottle this it would be amazing life changing, for so many people. But it takes work. We've got to exercise.

We've got to find that motivation, get out there and do it. Besides the brain neuroprotective effect, physical exercise may also attenuate cognitive decline.

They have mitigation of cerebral vascular risk. So this means if you've ever been told that you have stenosis in your arteries you have a high calcium score cardiac calcium score.

You have vascular dementia. If anybody has ever mentioned words like that to you, exercise is crucial. You must be getting plenty of it. And I would say all four types.

So if you have and also traumatic brain injuries, we need new blood flow in order to heal inflammation or injury in the brain. And so mitigating cerebral vascular risk is a massive massive benefit to exercise.

And this just happens because we're increasing blood flow. We're using those vessels including the contribution contribution of small vessel disease to dementia.

So this is our vascular dementia. And even when those capillary events aren't so that's where the oxygen and nutrients diffuse. They go across from the blood vessels into the tissues where they do the work.

And if we can't get that across then they're not going to be able to. All those nutrients, all that oxygen, all that great food that you've been eating isn't going to get into the brain to do the work that is needed for repair.

And so getting exercise helps with delivery of all of those great things you're eating. Exercise should not be overlooked as an important therapeutic strategy.

I hope I've inspired you. Thanks for hanging in there with me. As we review the science and what it's saying about how important exercise is. So what do we want? Bigger brains? What do we want?

Bigger brains? How do we get them through improved blood circulation, improved blood flow, improved delivery of nutrients that are needed for the brain.

And Doctor Peterson says over and over again that ultimately what's going on with dementia is that we're not getting enough energy. It's an energy utilization dysfunction dysregulation.

And so by getting more exercise and getting better flow, we can optimize the delivery of everything that turns into energy production. Right. All of the glucose, if that's what we're still using the ketones, hopefully we've dissipated.

This also leads to synaptic plasticity. We talked about neurogenesis which is the growth of new neurons, neurotrophic factors. We discussed. That's the signaling that says to make new neurons extra kind.

Many of us have heard of cytokines because of the, pandemic, because of Covid 19. It causes the cytokine storm that's associated with inflammation. But this is the opposite of that.

This is a storm of good things in the blood and telling the brain, basically, again, more signaling to the brain to create bigger brains, more resilient brains.

And of course, clear cognition and then epigenetic factors. So exercise is one of these epigenetic factors like toxic exposure like like acts like, excuse me, like diet, like stress.

All of these inputs into the system tell our genetics what to express. And so when we can tell our genetics to express the best of our potential, we get better outcomes.

Exercise, of course, allows us to discharge and release stress. From our systems and really helps mood modulation, of course, insulin sensitivity and so many other great things.

But this is why it's so important for cognitive function. So I mentioned we're going to discuss four types of exercise. They're aerobic exercise strength training.

The cognitive physical combo which you may not have heard about before. But I'm going to go deep into why that's so important. And then levo to a contrast oxygen therapy I grew up in Hawaii and this woman is dancing hula and hula is one of these any dancing really?

But hula in particular? It requires strength, grace, memory to remember the steps, to learn the steps of the dance. It requires being attuned to the music and, maybe to the people around you who are dancing with you.

So really a beautiful way to create community, to create strength, to get that physical combo. Exercise. Physical cognitive combo, exercise going. And then it does get your heart rate up.

It's harder than it often looks. In fact, part of the the point of many of the dances is to make it look easy, even though it requires lots of training, lots of strength, lots of aerobic, flexibility and that cognitive function to remember the steps.

So then type one there. You can take out a pen and paper here and do this math problem yourself. Aerobic exercise examples are biking dancing rowing jogging.

And I like to row. I have a rower and I find it very efficient. And it gets lots of the different big muscle groups in your body. You can do it quickly and easily.

Other people love getting outside. I also love going for a run on the beach, and it's one of my favorite ways to get some aerobic exercise. And so whatever works for you to get your heart rate up.

The goal is to spend 200 minutes a week. This comes from the Framingham Study, a big, heart study that came out of the East Coast. And it's 200 minutes a week is where the the switch seems to flip around, getting you that

cardiovascular benefit.

And protection. So the way that we calculate where we want your heart rate at for those 200 minutes a week. So we want you in this moderate to vigorous exercise.

Spot. So that's 75% to 85% of your maximum heart rate. And so we calculate your maximum heart rate by taking the number 200 minus your age. So for example, if your age was 67 right now then you get the number 133.

That's your maximum heart rate. So we don't want you there for 200 minutes a week. We want you just below that. So pushing it but not overdoing it. So that would mean your heart rate, your target heart rate is 100 to 113 beats per minute.

So hopefully if you just take 133 and multiply it by 0.75 or 75% and then 133, multiply it by 0.85 or 85%, you'll get that 100. And in that 113. And that's the zone that we want you in.

That is how you're going to get that benefit out of a real quick exercise. So walking is not enough. And then strength training. Strength training is very important because those neurotrophic factors, things like testosterone are neurotrophic factors.

They tell you can remember when you were 19 or 21 and how you've got all of those hormones, those sex hormones, estrogen and progesterone, testosterone, DHEA, pregnant alone, all of those hormones going to the brain.

They help you to learn. This is why we're in school. We're building new skills. We're learning how to do the, you know, whatever it is that our job will be.

And it's easier for us to develop those new skills. Was it whether it's working on the computer or doing certain types of math or communication and human interaction, whatever that skill is that we're developing, it's much easier to do in your early 20s than in your late 60s.

And part of that is because of the neurotrophic factors present. So at the height of our hormones, when we're in our late teens and early 20s, it we are it's easier to develop those skills then as we, as we age and have less of those hormones, it's harder.

And muscle helps us to improve the amount of those hormones that are available endogenously or that are naturally there. If we start to waste away those that muscle, testosterone, begets muscle.

But muscle begets testosterone. And so we want to have plenty of muscle present. And the way to get that is through exercise.

Strength Training for Muscle, Bone, and Fall Prevention

Now, the extra benefits here are that for somebody who's frail or, or at risk of falling through strength training, they will become much stronger and reduce that fall risk, which when we think about kind of the the biggest issues that come up with aging really are falls and dementia.

You know, not that I want anyone ever to be diagnosed with cancer, but cancer is something that comes up later in life more frequently as well. And yet many cancers are highly treatable.

And yet dementia. Although I believe highly treatable, it takes a lot of effort, and we want to prevent it. And the falls are in the same category. Many people take a quick trip down hill after a fall, and so anything we can do to prevent this and exercise really is anti-cancer as well.

This is going to help everything, but in particular those there's big issues that come up as we age the fall risk. And then the dementias that make us less and less independent.

Those things are really scary, really debilitating, very expensive. Even financially, morally, emotionally. They're very, very trying. So we want to, use exercise to our advantage in every way that we can by reducing the fall risk there and then also improving bone health.

So the more exercise we get, the better our bone health. And when we combine this with the right nutrients and hormonal support, we can often see osteoporosis start to improve, osteopenia improve so that again, there's less risk for breaking bones later in life.

And then not to mention looking good and feeling good, right? That we get with having those more defined muscles more toned. So some examples of this type of exercise is just weights we have at and we have small weights that we can use calisthenics, things like sit ups, push ups or crunches, pull ups, those kinds of things are really great for building muscle, of course.

And hopefully if you're working with a trainer, which I highly recommend because we want to do this safely, make sure there's no herniated discs or falls or anything like that.

We don't want to create new problems. But working with a trainer, they can take you through calisthenics, isometrics maybe using bands, maybe using small weights, all of the things that can help you to build muscle, build strength, and do it in a really safe way.

Type three. So this is the most important one and probably something you've never heard of before. So what we want to do the best, most effective way to get improves cognitive function from exercise is to combined exercise for your brain with exercise for your body at the same time.

So this is a little bit of a science about what's going on there. So this analysis showed a small to medium positive effect of combined cognitive physical interventions on global cognitive function in older adults with mild cognitive impairment or dementia.

So we're getting a small the medium positive effect on people who have dementia when they combine these two things for all global common cognitive function.

It's a small to medium. We say, well is it worth it? I'm going to convince you why a combined intervention was equally beneficial in patients with dementia and mild cognitive impairment.

That means regardless of where you are on the spectrum of decline, even if you have severe dementia, you still get benefit. I mean, this is incredible.

This is so important to be harnessing the power of this type of exercise. In addition, the analysis showed no longer small to medium positive effect, but a moderate to large positive effect after combined cognitive and physical interventions for activities of daily living.

So if you've never heard that term before, this is really important in the space of cognitive function and dementia. As activities of daily living are the things like being able to dress yourself, feed yourself, go to the bathroom on your own, take a shower by yourself.

These activities of daily living are what can maintain your dignity and independence, and then what sends you down that path of being completely dependent on caregivers or loved ones to provide for you?

And to make sure that you're safe day to day and getting everything you need just to stay alive and not is so hard to watch and see. And this sort of intervention can even improve your act, your ability to to fulfill those activities of daily living to a moderate to large positive extent.

I mean, this is radically amazing and beneficial. I cannot recommend this type of thing more. There's also a small to medium positive effect for mood.

And when we think about how depressing that can be to be going through something like dementia, whether you're on the caregiving side or you're experiencing it as a patient, we know depression, anxiety, and dementia often all come together, because of just how challenging this can be.

And so if we get any improvement in mood, this is well worth doing. So improvements in global cognitive function, big improvements and activities of daily living, and improvements in mood.

This is hands down one of the most important interventions. And so how to do it when it excuse me, I got ahead of myself there. So how to do this? Some examples of this are things like yoga, pilates, exercise classes where you're listening to the cues of an instructor that requires heavy lifting.

The other thing you can do is get on a treadmill or go for a brisk walk. You want to be going fast enough that your heart rate is up, but you still have your breath. So right.

If you're sprinting, it's hard to think. But if you are running at a quick pace, you have your your, your heart rate up, but not at max heart rate.

Combining Cognitive and Physical Exercise

You can have a conversation with someone who can be quizzing you, maybe listing all of the presidents of the United States in order, maybe listing, the states and their capitals, doing math problems, anything that requires heavy lifting of the brain while you are at the same time getting pretty heavy lifting with your physical exercise.

So they're beta testing an app called Genius Gems. One of the scientists, Sarah McEwen, who was interviewed today, she contributed a lot to this research.

She's a PhD researcher, and her product is a way that you can get some ideas about how to do this. But any time you are maybe, say, going for a brisk walk or a run, and if you're on the treadmill or you're outside and you're listening to a podcast or something else, I know a lot of people say, oh, well, when I'm walking, I listen to a podcast.

Well, when you have to be doing more than walking, you really need to get your heart rate up, not maxed out, but get it up. It can't be a leisurely stroll.

And then two, if you're just listening, you're not really cognitively engaging. So what you could do is listen to your podcast and then pause it and then say out loud, what I got from that was, and make your brain work to think about that information.

Quiz yourself a little bit. Who was that speaker? What was their name? What did they say? What were the conclusions from the study they were referring to?

When you do that, you increase that workload on your brain. And when you do that with exercise, that's when we get all of these incredible benefits. This is free.

This doesn't cost anything. It just requires time, effort and energy. And it is so worth it. All right. The fourth type of exercise is contrast oxygen therapy.

And so I wanted to share an example of someone who really, really benefited. In December of 2019, I got a phone call from a woman up in Oregon, and we had just announced that we were opening opening her on it in the spring.

And, we were getting lots of calls from different people. And she said, you know, there's no way my husband and I can come to Marama. We are very well planted in Oregon.

And she had this this wife she had, is some debilitating autoimmune condition that required, you know, her to be pretty dependent on her husband. And her husband started to have cognitive decline, and she was terrified because both of them were going to be in a position of being very dependent on other people.

And she was staring down the barrel of that was with very anxiety provoking for her. So we chatted for a bit and she said, if we could do one thing because this is very overwhelming for me, we could do one thing, what would you recommend?

And I said, no, no, you can't do that to me. I have to give you two things the ketogenic diet and levo to contrast oxygen therapy. And I got a message from them.

So this is December of 2019. So in the midst of this pandemic, so several fast forward 4 or 5 months in the midst of this pandemic, we have some great news about my husband's condition, which was cognitive decline.

His intelligence has improved from the 75th to the 84th percentile. Memory went from the 78th to the 85th percentile. People's skills went from 86 to 90 fourth percentile, and navigation went from 87 to 96 percentile. Wow.

They were able to measure this decline they were involved in. They were signed up for the Recode program. And so they had access to brain HQ and CNS Vital signs, and that's where they were measuring this.

And so we got this objective data. We got great information about how how much his brain was improving. And they were feeling and seeing the benefits too.

He was still able to help care for his wife. And so their life didn't get turned upside down, traumatically. And they weren't suffering more. They were actually improving to a miracle.

So how to do this? This is a picture of, one of our residents at Merola, and she is hooked up by a mask to an oxygen reservoir. So this is common treated oxygen.

When when we talk about this, I want to compare it to air. So air that we breathe, typically day to day is 20% oxygen and the concentrated oxygen is at 80%.

So what happens is an oxygen concentrator that's a little bit cut out of this picture here. But that oxygen concentrator, we turned it on about an hour before our residents are going to go down there and get exercise.

And when we turn it on, it starts to fill this bag, this reservoir with concentrated oxygen that will be available when they are on the bike. And so then we switch back and forth to get that contrast.

What we do is switch back and forth from positive 80% oxygen down to negative O2, which is about 8% oxygen, much less than not zero, but much less than air.

So there's a couple different ways that you can do this. You can just do y exercising with oxygen therapy and just do exercise with extra oxygen. You don't have to do the contrast and you still get benefit.

Although from my experience, I see people get more benefit when they push it a little bit and go into negative O2, especially during the sprints. So this is really exciting, really fun.

I've seen great, great, great results with this. I've personally felt it. It is hard work, but again, it's worth it. People get a lot of great detox support from this, a lot of great again, strength and aerobic exercise.

So you're getting those first two together. We use here the Schwinn airtime. They don't pay me. Don't worry. But the Schwinn airtime is one that we see works well with the tubing.

You get the arms and the legs going. We have a rower at Marama because I love them. But that gets caught up in the tubing. So a bike like this or a, treadmill are the best ways to do it with.

Because you've got this elephant trunk coming from your face, so you don't want to get all tangled up. So what's going on here? When we do contrast oxygen therapy, what we're getting is the benefit of the hermetic effect.

If you've never heard of this, the concept is simple. It's essentially this idea that our our bodies are in a whole dynamic state at all times. There's some there's things shifting, but we want to stay within some sort of balance.

And when we put a little bit of stress on the system, right, it's not too little. So just a little bit of stress doesn't do much.

Contrast Oxygen Therapy and the Hormetic Effect

But when we get to a certain point of stress, like negative O2 or exercise or a fasting mimicking diet or even hot and cold therapy, what we start to get is this comedic effect where there's increase in strength, there's increase in resilience.

So we're asking the body to do more so that then when we need it to do more, because something comes up, there's a cold or a flu or a fall or something that we can't control stresses our system.

We have more ability to respond and adapt to it. And this is a definition of health, right? How resilient are we? Maybe it's not even a cold or flu or a fault.

It could be a flight across the country to go see your grandchildren. That you want to be resilient to the changes in oxygen when you when you get on a plane, to the potential exposures to the stress of jetlag.

Right. These things don't always have to be big, life changing events or really traumatic things. They can be even just the small stressors that come up day to day.

Maybe it's a move and a good move now, of course, and particularly in the case of oxygen, this is clear. If you get too much, you have a weakening of the system and you can die, right?

Like you can you can suffocate. So what we're not doing is going there. Obviously where we're going is in that that space before under the area under this curve and that space is where we get that increased resilience, particularly if we do this over and over again day after day.

So with contrast oxygen therapy what we're getting is vasodilation. So we're getting bigger blood vessels which mean they can means they can deliver more blood and nutrients.

We also get pressure changes in the capillary beds. And that micro vasculature. And that means that we can get more diffusion across those membranes. We get this paramedic effect that I was just describing.

We also get changes in cells signaling an increase in the concentration. So the number of mitochondria in each cell over time. When we do this that means mitochondria are the powerhouses of our cells.

They are there to make and create energy or ATP. When we have more of them, we get more energy. And for brains that are suffering with cognitive decline, this is so critically important to good function.

And then the other thing that happens is that senescent cells retire. So this means that we can recycle those cells and our brains and our bodies that aren't really doing the work that they're meant to.

You know, they're kind of like just getting by. They're in this gray area of not totally dead. Nothing no signal has got, has come for apoptosis or to to kill them.

And recycle them, but they're not really optimally functioning. So they're not doing the job that they were built to do. What we want to do is clear those guys out and get that signaling to create new cells that are going to be in that category of optimally functional.

So really exciting ways to get benefit from contrast therapy. So how do you do it? This is how we do it at Marama the first couple of weeks. We just want people getting comfortable.

So we don't want to scare anyone off. We don't want anyone to think this isn't for me. I don't like it. It doesn't feel good. We just want them to be comfortable on the bike and comfortable with the mask because it's different. It doesn't.

It doesn't feel great the first time. It's. It's odd. And then after they are comfortable in the first, in those couple weeks, 2 to 3 weeks later, we start introducing the negative to and really cheering them on, encouraging them to push themselves a little bit more with that negative two, because that's where so much benefit comes from.

So we do about once a week for on. The goal is to be about two thirds of the time. And negative oh two and a third of the time and positive oh two. And this helps again to get all of those benefits of increased blood circulation, mitochondrial changes, the paramedic effect, the cell signaling the senescent cells start to retire.

All of those benefits really come when we can spend the majority of our time in negative oh to. So what does exercise look like? Marama, we have 2 to 3 periods of time.

Yoga also is exercise here at 11. But after breakfast there's a walking club nearly every day. Sometimes there's a day off. It's if it's raining or something comes up.

Usually on Sundays there will be church, and then they walk after church. But there's a walking club, so walking is important. Walking is great. It's a good way to get outside, connect with nature.

Notice some of the changes in the seasons. A great way to connect with each other as this couple is doing here. So walking is wonderful. Sometimes they walk for 30 minutes, sometimes it's a couple of hours, sometimes at a park, sometimes just in the neighborhood.

So mixing it up, keeping that adventurous spirit there, is great. And starting your day with some movement can also again get blood flowing and get circulation going.

And then at 11, some days we have yoga, usually three days a week there's yoga or meditation. We always do the curtain kriya meditation after walking.

But another yoga and meditation course class happens before lent. Typically we have, visiting guests who come and provide those services. The yoga teaching and the meditation.

And then in the afternoon, 5 to 6 days a week, we do the therapy circuit, the therapy exercise circuit. And this is where we have rebounder or mini trampolines.

We have, the rower like I mentioned, we have the Levo two and the bike. And you can do the bike without the levo to whatever works for those residents.

But they basically each go from station to station to station in a circuit and get the benefit of all of these things. We have the lightweights like we talked about with strength training.

There's a bio mat. So so this is the bio mat here. So if someone is feeling really tired and not up to exercise that day, or maybe they've had an injury recently or something's come up, they're not able to be getting a lot of exercise if they feel agitated.

Even Biomet is very calming, very soothing. And because it's warm, it can help to relax all the muscles on the back. And then you can see, we've got, doctor G here in the sauna, which is a great way to get, again, more blood circulation, more blood flow.

And then, of course, detox.

Exercise Routines and Activities at Miramar

This doesn't replace exercise, but it's one way to gently get some exercise, especially if you're between the rower and the bike and you've gotten a lot of good, vigorous, exercise of your heart rate up for a while.

Then you can get in the sauna and relax a little bit, but still keep that blood flowing. And then the UV light is why you can see the red, the red light in here.

It's because those lights are on and the lights, the red light. Therapy is another thing that can be very, very helpful for cognitive function. And so we have both the UV light and the violet available at arama.

So just to kind of summary, what are some of the things that we have available at Marama and things that I hope that will inspire you, to incorporate at home in terms of exercise.

So yoga, we don't do plays at Marama, but we have yoga available. And I think, ladies, if you're getting out to a class, it's another great way to combine that cognitive exercise with physical exercise because you're listening to the cues and then hula, this there's hula hoops here, but hula dancing, other dancing very, very important.

Again, there's research around ballroom dancing and ballroom dancing being shown to support cognitive function. And that is because you're getting this attunement with a partner.

You're memorizing the steps, remembering those steps. You're listening to music becoming present, reducing stress. There's a social aspect and it's also physically demanding.

So that combination of things is fantastic for cognitive function. So if you've been thinking about taking up a new hobby, make sure it's dancing, exercising in some way or another, then walking, of course, is great, but it's not enough.

Don't forget, it's not enough to just take your dogs for a walk, especially if they're little dogs and they stop to pee and poop and sniff right? That's not exercise, then.

Gardening is a wonderful way to connect with, connect with, nature. Be outside, get the benefits of sunlight and sometimes lifting heavy bags of soil and all that kind of thing.

If you're digging, that can be some, some physical exercise. So, squatting down to pick weeds and do things like that and squatting and standing, squatting, standing that can be physically demanding.

And so just hanging out in the garden, drinking tea is not. But if you do some of the physical exercise there, then that's a fantastic way to do it. We are quick to recommend, we expect that everyone has the ability to heal and get better and physical therapy.

Getting a good physical therapist involved, is a fantastic way to get the benefits of that. We also happen to have a physical therapist we work with who the ladies love, and so if you can find a physical therapist that there's a little bit of attraction to you and help to motivate to do all of those exercises, to show up and really give it your all.

We've seen that phenomenon over and over again at Marama. Everyone loves when Kevin is on the schedule and coming and they will do anything they will do, as many sit to stand as many step overs.

Whatever he's asking for, they're on it. So, hopefully that's inspired you to get a hot trainer right away and get going with your exercise so you can enjoy the brain benefits that exercise has to offer.

Thanks so much. Can't wait to see you for day six tomorrow and the Reverse Alzheimer's Summit.