How to Boost Your Brain With Custom Exercise Transcript

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Introduction to Ryan Glatt and Brain Health Exercise

Welcome to this episode of the Reverse Alzheimer's Summit. I'm your host, Dr. Heather Sandison. I'm delighted to introduce you to Ryan Glatt. He's a personal trainer and brain health coach with over a decade of experience in the health and fitness industry.

He currently works alongside clinicians and researchers to study the effects of cognitively-enhanced and comprehensive exercise plans. At the Pacific Neuroscience Institute.

He also assists with the delivery of memory training classes. I am so delighted to introduce you to Ryan because many of you have heard me talk about dual task exercises and how important that is for the brain, especially when we're doing the heavy lifting of reversing cognitive decline.

And Ryan is the person literally doing the research to explain to everyone and to show the science of what's going on there. Ryan is also currently in a Ph. D.

program for Leadership, Health and human performance. And so, Ryan, thank you for joining us and welcome. Yeah, great to be here. Dr. Sandison, thank you so much for having me.

You have many more accolades, but I know our listeners just want to dove into like the nitty gritty of this and also the really actionable step. So can we first start with like how important is exercise for brain health, whether we're in prevention mode or we're attempting reversal?

Absolutely. I think when we're talking about things like dual tasking and brain health, there's a lot of interesting things we can fixate on. But I always like to start by talking about what is good for the brain, and you talk a lot about it, those things.

And of course, exercise is one of those things that everybody agrees upon is good for the brain, and it's very difficult to play favorites.

How Exercise Supports Brain Health

I can barely pick out like a favorite color or a favorite restaurant, but certainly in terms of like evidence, weight and how much evidence there is, there seems to be quite a bit for exercise and brain health.

And of course, it depends. There's always more research that's needed. But it's the research is quite convincing in understanding whether or not exercise is good for our brains. And it certainly is.

And there's a lot of different reasons. It could be good for our brains. And most importantly, I think just how healthy diet can be good for our brain health.

Different aspects of exercise may yield different benefits, perhaps unique benefits. And I think that's where it gets exciting and so many people have a different relationship with exercise.

I know growing up it's always been about like weight loss and looking good and your body composition. But as soon as I really came to understand the mental health and brain health benefits of exercise, it's almost a different type of motivation.

And so when I speak with individuals, especially those who have the goal of preventing cognitive decline or already have some sort of cognitive impairment and want to further reduce that cognitive decline, exercise becomes more of an ally than a chore that you have to check off.

So, you know, you mentioned that we all kind of agree that exercise is good for us. But when you break down some of the at least the big buckets, like why is it good for us?

What are the mechanisms? Yeah, I like to kind of categorize the mechanisms at three different levels. The first level is the micro level. This is all the cool stuff that we like to hear about but can't really see or feel in every day.

Adult human brain life. There are things maybe from animal studies or things from other, you know, more studies, the micro level of things like molecules, hormones, proteins that are expressed.

This includes things like brain derived neurotrophic factor or BNF, which we we hear a lot about. It could be IGF-1 or intellect growth factor-1 nerve growth factor.

It could be certain types of precursors to those growth factors. And growth factors are anything that tell the brain to grow, survive, do good things so that we can live a long, healthy life and have great brain longevity.

That's all at the micro level. And in addition, it's things like changes at specific neuronal levels. So neurons are brain cells for those that don't know.

And when we have any assumed change to a neuron, a neural network or connections between neurons. So a lot of people refer to it as neuroplasticity. That would also be at the micro level.

However, you never go to the doctor and say like, Hey, how is this one neuron, doc? Or Hey, where are my levels of BNF now? And of course you can do that, but we don't really have that.

You know, this equals that sort of approach at the micro level, but it's all the cool things that we assume are happening that we hear are happening. And the micro level is good to understand because we when we want to understand how different types of exercise or different aspects of exercise affect the brain, the micro level might have some explanations.

We can come back to that. Then there's the macro level. So if you were to go to a neurologist and get a brain scan, you can look at the brain at a structural level or the brain at a functional level.

So the structural level we look at like an MRI, we see how big the brain is in certain regions, certain aspects of volume. And then we could also do things like a quantitative EEG to look at the function of the brain.

And exercise can help with both. It can help with brain function and brain structure, kind of depending on how long the study was and what population, what the intervention was.

But generally speaking, it can preserve brain structure, even increase brain volume in certain regions over certain periods of time and can improve the efficiency of brain activity.

And then we look at the behavioral level and the behavioral levels, kind of the important one, because that's the one we see and feel every day. So this is improvements in mood, but also improvements in cognition, things like attention, memory processing, speed and executive functioning.

And all of these things can be measured in different ways. But you don't you know, it's advised you get testing, neurocognitive testing or neuropsychological testing.

But for those that don't, if they undergo a 12 week exercise program and they feel sharper, hey, that's valid. That's a very important thing. Or if I go to the gym just after one session, I have better mental health or better mood states, or I feel a little sharper.

That's certainly valuable. So that's at the behavioral level. So in review, it's really the micro, macro and behavioral levels. And it's kind of easy when you categorize I categorize it like that.

But if you take all the mechanisms out of the file cabinet and throw it on the ground, there's a lot going on here and certainly we could dove more into it.

But I think it's important to be more pragmatic. Absolutely.

Micro, Macro, and Behavioral Mechanisms

So I had the pleasure of coming and visiting you at the Pacific Neuroscience Institute not that long ago, and you gave us a tour of the brain gym. Would you describe you know what, I want everybody to know what's there.

So sort of at this ideal level, like if you had access and certainly if you're in Santa Monica or in West L. A., reach out to the guys at the Pacific Neuroscience Institute.

They're doing incredible things. But I want to take us through sort of like an audio tour of what's going on there. And then also, if you can relate it to what people could maybe be doing at home if they don't have your fancy machines.

Absolutely. And I think before we do that, if I could just identify the types of exercise. Yeah. Oh, yeah. The brain gym stuff and the dual task and stuff within those categories and then coming back around to how we can actually apply it to what we do.

So there's different categories of exercise. There's aerobic exercise, which is anything that gets your heart rate up. There is resistance training, which is usually can include things like bodyweight exercise, but mostly is referring to weightlifting or strength training of some kind with external loads of resistance of weights or bands.

And then there's what's called neuro motor training. And neuro motor training is something that people don't talk as much about, and it's a very diverse category.

It can include sports, it can include dance, martial arts, it can include mind, body, exercise like yoga, tai chi, qigong and pilates. It can also include anything that's open skill.

An open skill is anything that's like more unpredictable, and that you have to constantly adapt to kind of like a sport like ping pong or a dance class or something like that versus a closed skill, which is, you know, what's happening and when.

So if I sit down at a weight machine there, there's really not going to be any surprises. And so both are good. We both need close skills and open skills, but open skills are more cognitively demanding.

And because of that, there's some research showing that there might be unique benefits cognitively from open skill exercise when compared to close skill.

And that's not villainizing the close skill. We still need that, but hey, it seems to make sense that when we engage our brains while we move, there seems to be some additional benefit there.

So that makes sense. Now some people want to address or isolate those cognitive challenges specifically and deliver them while people are moving. And so there's this practice, there's two things called dual tasking and extra gaming, and I'll define both of them, but they both are kind of more artificial ways of giving someone a set of cognitive stimuli while they're exercise, whereas sports, dance and martial arts are more naturalistic in how they do that.

And so it's kind of like the supplements of cognitive and physical training, if that makes sense. But there's a lot of research to show that extra gaming and dual tasking can improve cognition, balance, walking function, a whole host of populations, even in individuals with neurological or neurodegenerative conditions.

And so for individuals with a specific cognitive goal, such as those in the populations I just stated, they might want to engage in exercises that are specifically more cognitively demanding.

Okay. So aside from the heavy back story, the dual tasking is defined as doing something mental and physical simultaneously, or at least something that's called cognitive motor dual tasking.

That's what it's responsible for. So walking while talking is the most naturalistic dual task. I can give an example for a cognitive motor to a task. A less naturalistic one is counting backwards while walking.

And I say it's less naturalistic because no one just goes and does that. No one's like, I'm going to go out for a walk and count backwards while I do that.

That's not exactly anyone's idea of a good time, but those are cognitive motor dual tasks. And then there's X Games, and as a kid I had a traumatic brain injury and I was pretty overweight, but I was really addicted to video games and there was a thing called dance dance revolution.

And for those that don't know about it, and for those that do, it's like, Oh yeah, I know what that is. It's a pad or a mat with four arrows, one pointing up, one pointing down, one pointing left, one pointing right.

And you're basically playing a dance video game. And that's how I lost weight as a kid. And then that led me to kind of get into the gym. But it also helped me cognitively.

I was terrible in school and it allowed me to improve my social behavior, my academic performance, my cognition, my processing speed, and then everyone has probably also heard of the Nintendo Wii or We Sports.

These are examples of General Xer games.

Types of Exercise: Aerobic, Strength, and Neuro-Motor

And while they seem like kind of fun, silly, pointless, there's actually a lot of research to show that these can help with physical function, motor function and cognitive function because they're challenging the mind while also challenging the body.

And what about the other types? What's that? There's probably a whole host of other things, but balance comes out. Yeah, yeah. That's part of the physical function.

So when we say physical functioning or motor function, we can mean anything from grip strength to balance improvements. And balance is one of the main things balance and cognition, which are linked inextricably.

And what's cool about these extra games is they've really come a long way in terms of being more specific. So there's extra games for Parkinson's, there's extra games for persons with dementia, there's extra games for older adults with balance deficits.

And these are called specific or clinical extra games, and they have elements of dual tasking embedded with them or within them. And so the Fit Brain program here at the Pacific Neuroscience Institute is kind of like a whole collection of these different extra games and dual tasking approaches.

And for all intents and purposes, we call it a brain gym. And other people have done a similar approach in like cardiovascular rehab, where they are putting forth more effort without really knowing it because they're focused on the game.

And people have called it a clinical arcade, which I'm perfectly fine with because I love loved Chuckie Cheese as a kid. I love David Buster's, I love arcades.

And so what if you're exercise? What if your rehabilitation could feel like an arcade experience? That's not infantilizing, but it's just fun and enjoyable.

And you have this sense of autonomy and wanting to beat your score and improve upon yourself. And I think

gamification is certainly something that can harness that.

Yeah, we've talked about that a lot. It's much easier to stick to something if it's fun. But also there's data that shows that we get more cognitive benefit if we're having a good time versus if it's less stressful.

So are there strategies that you've used outside of what you've already discussed to make it more fun? Absolutely. I think sometimes there's a lot of fun to be had in this world of exercise and a lot of people avoid it because they think it's the opposite.

And so for people to do this at home, you don't need to like get a big brain training set of lights or walls or whatever. Of course, there's things like virtual reality which are becoming much more affordable.

I play a lot of virtual reality games. I play ping pong at home against my brother on the East Coast all the time. And so there's a lot of brain body games available within virtual reality.

But for individuals who want to do this at home, it's it's simply asking the question, what do you enjoy? What have you enjoyed in the past but haven't done in a while, or what have you tried that you might enjoy?

And I think the latter one is definitely a question to ask because there's so many things that people haven't done. And so if you think of every sport, every dance, every martial art that you can, every extra game you can think of, there's kind of a overwhelm and amount of options there.

And so just go in based on the question what have you enjoyed is only as extensive as that person's experience. And so I haven't met a person that's done more than like five sports.

So it's like there's a lot of things to sample. And even if you're just going among like the racket sport category where you go from pickleball to ping pong to tennis to racquetball, you can try different ones within that same category.

And so I think having fun includes aspects of gamification. It could be social activities, things that you enjoy and just enjoying the aspect of skill development.

Now that doesn't mean that it can't be frustrating. A lot of people who try to acquire new skill, experience, frustration, but that's part of the effortful learning process that is really good for our brains.

And many people avoid things because they're bad at them or they perceive themselves to be bad at them, or they can anticipate failure. But that's that's kind of the idea that and so I have a phrase that I've yet to put on t shirt called embrace the suck, like embrace sucking at something and know.

I think I probably have recruited more, you know 75 year old men into Zumba than anyone else, because I'm always pushing this idea that, hey, you want to embrace the things that you're kind of avoiding because you suck at them and that process of learning is the benefit for your brain.

How? Fine, thank you. And I, from a practical perspective, you know, we talked about you guys in Santa monica. If somebody is there, go to it. But even we're recording this on January 2nd, right?

So there's lots of people who have New Year's resolutions and getting them to stick. I always think for me it has to be pretty easy. So yes, fun but also doable.

Like the I can't have this hour long commute to get there. I can't have this huge hurdle to make it happen. Do you have any other suggestions being a fitness guru, an expert that you are, how do we get these things to stick these new habits?

I'm not entirely sure. I just have some ideas. And I think that's the thing is if we try to approach it, where I want it to stick and you need to do this thing and keep it a habit forever, we're already setting ourselves up for failure.

So I think the first thing is just being honest with ourselves. Who really keeps this consistent forever all the time without any speed bumps and even the professionals, right?

So we're humans is as soon as we acknowledge that the journey gets a little bit easier and we don't have to guilt ourselves or feel bad when we don't do these things.

And I think we need to retrain ourselves to have a different relationship with it. So that's the first step. I think the second step is picking things that I think are preferable for people.

We're just told. We tell other people all the time things they do not prefer. And so if we go to a restaurant together and like, Hey, here's all these options, you have to pick one, there's the overwhelming option, and then there's me telling you what you should get.

And then there is you saying, Well, I kind of want that, but I don't really want that. So people have a lot of preferences and I think the first step is just understanding what those preferences are.

So if I'm trying to get someone to go to a gym because I think it's a good idea and they really don't want to go, what battle am I really fighting here?

You know, if I want to help that person exercise online or exercise at home, yeah, let's go down that route.

Dual Tasking, Exergaming, and the Brain Gym

Let's let's take the things that people are most likely going to do versus what we think the ideal is. And when we start to say, like, where are you least likely to fail, usually the blanks get filled in pretty easily.

And so when I say, where have you exercised an exercise in the past where it didn't stick and where have you exercise in the past where it did stick? We have a lot of information right there, and so I like to stick with environment.

Is it the line, is it in person? Is it in a gym? And then furthermore, are you a person who's internally accountable or are you that person that wakes up at 5 a.m.

and puts on their running shoes all the time and doesn't need anybody to tell them? Or are you externally accountable? Do you need a trainer, an accountability person, or buddy?

Do you need a group class? What? What environment? Really would help you stick to this more? If we start to ask those questions, usually people coach themselves into a program already.

Like, yeah, I have a friend who calls himself an accountability buddy. Yeah, accountability. Yeah. But for some people, like, I like the idea of that.

But for me personally, that just doesn't work. And you will never catch me in a group exercise class. I'm just too picky. So it's just like, okay, everyone's got their preferences.

That's all right, let's find it. And I'm the opposite. Like, I won't do it unless I'm in a group, unless it's social don't. So I don't really prefer to use phrases like motivation and willpower because I always just assume that this isn't something someone prefers.

I'm like, okay, let's, let's package it up in a way you'd really like. Oh, that's great. And there's so many options you can usually find a package that works.

It's just a matter of kind of going through the process with either on your own or with someone. But that's a really great I think it just some questions to ask yourself.

I think you've really organized that well. So I do want to go back to the idea you have this incredible brain gym, so take us through it. And you know, there may be some people who have a group or, you know, they're in a position where they could recreate something like what you have going on.

So let's talk about the ideal, even though there's by no means are we suggesting that everyone needs this, just. Yeah, yeah. What does it look like? Yeah.

And I don't consider what I do to be ideal. I just consider it sort of like a specialty service that isn't very common. And so when people are looking to develop an exercise program, we want to check off those three boxes that we laid out the aerobic exercise, the strength training and the neuro motor exercise.

And this dual tasking, extra gaming and brain gym stuff is really part of that neuro motor category. So sometimes people want to check that off in this in this way it makes sense to them. And there's a good amount of research.

More research is always needed. We're trying to do more of that, but if people were to come into the brain gym, they would spent. Let's say they've already had a consultation about their goals and what they're trying to achieve.

We've looked at their physical function, perhaps they've had assessments on cognitive function so that there's a purpose behind what we're doing, and they may come in for 60 minutes at a time.

Usually sessions are one on one, but we do groups as well, and they might start cycling on an exercise bike with a virtual reality headset on, and they can see their hands with no controllers attached to them because of camera technology and one hand's red and one hand blue.

And as they're pedaling, they're collecting targets that are of that same color at different levels of of motor complexity. So, you know, reaching on the same side, reaching cross across from them, you know, kind of doing two at the same time and it gets faster and faster.

And that's the warm up. It's a gamified virtual reality bike, warm up. Instead of just kind of cycling on the bike and watching the news, think, you know who wants to do that?

Then what we do is we go to a big board called the Smart Fit and it has nine different targets. It's like an interactive wall with different lights. And so they might be going through the alphabet, hitting the letter a coming up with a word that starts with the letter a while marching in place, then going on to be.

So they're going to apple boy, cat, donut, eggplant. Maybe I'll give them a specific category. Then we might do some balance exercises where I give them a sequence of numbers and they're standing in the middle of a clock face.

I say one, three, five, eight, and then they step on them in the backwards order. And so it's a whole hour of these different exercises. We go through them, you know, 2 to 3 sets at a time, and we'll have anywhere from 10 to 15 exercises per session at a physically and mentally challenging activity.

But I have 95 year olds with dementia, 252 year old with Parkinson's, and they all get a good challenge. It's and it's my job to make sure it's never too much and never too little.

But prior to working here five years ago with Dr. David Merrill and the rest of our team here, I didn't have any of this technology and I just had tennis balls and I had colored dots that I took a Sharpie on and I wrote different letters and numbers on them.

Inside, I put four of those on the ground. I say, okay, you got one, two, three and four dots around you. I'm going to give you a sequence of numbers.

I want you to step on it and the exact sequence that I give you or backwards while balancing or marching, I'm going to throw you a ball while you do squats, just things like that to enhance the cognitive load of that individual.

Now that's harder to do on your own. You can't really just get a dual task and give yourself that that stimulus. It's harder to do that. There are a couple of apps that will call out numbers on a clock for you and you can do extra games.

And so that's why I suggest that anyone trying to do this on their own without a trainer or without technology, you should just sign up for a dance class or a taichi class because that has enough cognitive load.

And to be honest, there's way more research on those things anyway. But I have plenty of people that are doing their resistance training. They're doing aerobic exercise, they're taking a tai chi class or a dance class, and they come see me once a week.

So some people have it all, and sometimes people don't do anything but see me once a week. But every time they see me, I say, Hey, let's find ways of slowly incorporating other forms of exercise, because you really need that more regular dosage to have potentially a greater benefit on the brain.

What is the ideal amount or maybe the minimum amount? Is there a range of how much exercise and what types of exercise? If like let's just say you're starting from zero and then let's say you're somebody who has exercised regularly, but you know, you need to level up.

Yeah, for sure. So the the minimum recommendation that everyone kind of hears is this 150 minutes. Now, I don't think anyone measures anything in minutes per week, but somehow, somehow this is the result of all this systematic review of literature.

It's 150 minutes a week, and in plain English, it's about two and a half to 5 hours a week to 150 to 300 minutes a week of exercise. So two and a half hours to 5 hours a week.

Okay. Well, if you break that down, that's either 30 minutes five times a week or one hour, five times a week. And there's different variation of 45, 20 minutes, hour and a half, if you want to break it down in that way.

And in most of those minutes refer to cardiovascular activity. But they also say there's additional benefits for 2 to 3 days a week of straight training, 2 to 3 days a week of cardiovascular exercise, and 2 to 3 days a week of neuro motor training.

But then it can get further confusing because wait a minute, there's not nine days in a week, right? So how do we do all of these different types of exercise while still getting our heart rate up?

We're lifting weights and challenging our brain and bodies. So a good way to think about this is multimodal exercise where let's say I go to the gym for one hour, I could do 30 minutes of cardio, 30 minutes of straight training, or I go to a dance class and most of that dance class is getting my heart rate up.

Making Exercise Fun and Sustainable at Home

So technically it's cardiovascular and I'm learning a new skill. So now I just checked off two boxes at once, or let's say I'm doing strength training for 30 minutes and I structure that strength training with minimal rest periods and high intensity intervals.

So I'm getting my cardio in my strength training. And so there's a lot of ways to to check this off. Now, you don't need to be checking off all those boxes to elicit health benefits.

I often say, like, where can we start? In a way that's the lowest hanging fruit. And so let's say an individual's walking, which is the most participate activity in the world across all age groups.

And usually when I work with clients, that's where they're starting. So I say on a scale of 1 to 10, ten being the most intense, one being the least intense, how would you rank the intensity of your walking?

And they might say three to a four. I said, okay, well, for that 150 minutes, we we actually want a four to a six. So we're we're like one point away here.

And so when I kind of phrase it that way, they're like, Oh, I'm getting the number of minutes that's recommended just not at the right intensity. So they have to take it from a low intensity to a moderate, moderate intensity or greater or when they're pedaling on the bike, they're watching the news and they're kind of going really slow and they're not really they're just doing it, you know, to do something active.

And I say, Well, if you give yourself a little bit more hertz by there and you pedal a little bit faster, you're checking off that intensity. And maybe you just need to add one or more two days per week, and you're there.

You've hit that 150 minimum. And I like to start everyone with that checkbox of 150 minutes per week because 85% or 80%, I'm not sure where it's at right now of older adults are not hitting that recommendation.

And that is sort of like the minimum recommendation to achieve a whole host of health benefits. It doesn't mean anything less than that number isn't healthy.

Anything is healthy. But that's sort of the minimum dosage that we're trying to achieve for it to be clinically meaningful across a whole range of health benefits, including brain health.

And so I usually start people that are they checking off their minutes? If they're checking off their minutes rate, then I look at the variety. Are you just doing cardiovascular activity or can we add strength training as well?

And things like strength training also have a whole host of brain benefits. There's research showing that it can improve the function and structure of the frontal lobe, and I often find many older adults are not engaging in strength training for whatever reasons.

They don't know what to do. They're afraid it will cause injury. They don't think they need it. They've heard that aerobic exercise is the best form for the brain or something of that regard.

And so I start to very. Okay, how many types of exercise modalities can we get then if you know, I've never met anyone with what I call like the perfect brain healthy exercise program.

I usually find it's either the number of minutes or the variety. And if they're hitting both the minutes and variety, I start to go by cognitive demand.

How much cognitive demand do these things have? And usually these people need to switch up their routine a little bit. They've been doing the same strength training program for several years.

Maybe they got a list from a trainer or a physical therapist. They just really haven't changed it. And our brain needs variety to continue to adapt. So I usually go through the frequency and duration, then to the variety and then to furthermore adding some variety and multi.

We have a lot of caregivers who attend the summit and I'm curious if you are a caregiver caring for someone with dementia, either moderate or maybe even going in the direction of more severe?

And is there any language that you can help us with in terms of motivating someone? And I know you said you don't like the word motivation, but I mean.

It's a thing maybe coaching. Coaching might be a better term in terms of helping and supporting someone in from going going from maybe almost no exercise, very little movement, maybe a walk to the mailbox, but not much more than that to actually getting movement.

Right? Right. Yeah. So that's a great question. I think there's a lot of potential challenges that can happen when we're trying to encourage someone with a neuro neurodegenerative condition or neurological condition to exercise.

I think the first thing is changing our perspective of how that person approaches it. So I work with so many people, so many caregivers or care partners who say they won't do it. They're lazy.

I'm like, and I have to really explain what amnesic behavior really is. Maybe they forget it's very likely they forget, or perhaps they have apathy. They just there's not that they're lazy. Usually.

These are very accomplished people that maybe previously were very highly motivated to do things, but maybe they're apathetic, maybe it's low mood, and so it's changing the language around how we engage these people.

So just calling someone lazy and saying, I tried, I told them to do it and they didn't do it. That's usually where most people stop trying. And this this very much disappoints me because I think it reveals a lack of flexibility in how we approach it.

And I understand it can be challenging and people hold on to who that person is or was or what have you.

Exercise Dose, Intensity, and Variety

But I think being flexible and how we approach it is the first step. And if we have that mindset of flexibility, we can always problem solve because there's always going to be new problems that come up.

And the second thing is having some language around how this person communicates. So I have many clients with neurodegenerative conditions like dementia that will say when they get tired, they say they're in pain.

And then I kind of ask further, I'm like, Is this pain or is it fatigue? And they're just describing muscle fatigue, which is a normal response. And so a normal or maybe a more reactive response would be, oh, no, it's painful.

It's stop. And so we stop exercising altogether. And so certain bodily sensations and how we communicate around exercise may not be the same either. And so we might need to be flexible around that as well.

Ask clarifying questions, just have them describe it a little bit more. And then furthermore, if we're just trying to increase activity, the enjoyment piece is furthermore important for this population because exercise, when adhered to in this population, may not improve cognition as much as in mild cognitive impairment, but can certainly improve mood and physical functioning.

And when you get someone to exercise in a way that they enjoy and yes, and they're sleeping better and they're in a better mood, it's almost like a different person.

And I think the it's worthwhile trying to figure out how to get that person to engage in this very important activity that is essential for all of us, that allows them that benefit and makes your job easier in your role as a caregiver and care partner easier.

And that's all fine and dandy. But what if they're just saying, no, I don't want to exercise? Well, this is where we come back to the internally accountable versus externally accountable.

And I think a lot of people are expecting individuals with cognitive impairment to just all of a sudden be internally accountable because someone told them it was important down the line.

And I think especially with more cognitive impairment, we have to outsource that accountability a little bit in a lot of the times when the care partner or caregiver themselves exercises with the person in question, sometimes that solves the problem because everyone needs it, right?

Everyone's got to do it at some point. And so if you are a person caregiving for a person with dementia and you start exercising with them, sometimes that helps, but sometimes it's a friend, sometimes it's hiring a trainer, sometimes it's a group exercise class, and we just have to find ways of getting people to say yes.

And I sometimes if it's an appointment or something and they really dread it and they're giving you a lot of hard time about, Oh, I don't want to get up, I don't want to go.

Maybe it's the time of day, maybe it's the type of exercise that they're engaged in. And so we just got to find that first step to get them to start. And once we get them to start, incorporating other things can be a lot easier.

I hear some themes in there. It sounds like getting curious, being creative with how to do it, but not stopping. When someone gives you that know that initial no really committing to the process because there's a huge upside as a care partner that, you know, this person that you're caring for will become much easier to care for their mood, their sleep.

There's a lot of benefits that we'll probably see relatively quickly that will make your job so much easier. So putting in that investment of energy and creativity.

If they're saying, no, it's not because of them, it's because of you. And so if I just said, Doctor Sanderson, we're going to dinner tonight, and you're like, no.

Like I probably should have asked it as a question. Like, people still need their autonomy. And I think that doesn't go away. Yeah, got it. So helpful.

So you also mentioned, well, dance, dance revolution and your experience with that and the Nintendo Wii. And so I can imagine some people are sitting at home going, I think we have one of those in the basement should be dusted off.

And so can you speak to that? First of all, are these even available so somebody like wants to buy one. Can they go. Try to go buy a Nintendo Wii? Now, it can be incredibly difficult and expensive.

And furthermore, they're not really being supported. So I don't think that I've got like three Nintendo DS from clients that like fix this and I'm like, Oh, it might just be time to move on.

And so if you have a functioning one and you want to use it and you like it, that's fine. In fact, there was an article I was reading about a bowling league, a senior, we bowling league, where they had over 300 seniors in Texas competing on We Bowling still, which is very incredible.

Since then, Nintendo has moved on to other things, and getting a dance dance revolution set up is really challenging to do even for people like myself.

So I think it's important to ask, is that necessary or is that something we want to do or is there a way to get that in a in a different physical and cognitive stimulation, a different manner?

So if it was dancing, then maybe just take a dance class. But there are some technologies that use augmented reality on your phone camera or on your laptop that track your body movements without controllers.

And then also there is some devices coming out that use this camera technology or things like the Nintendo switch. However, my cautionary tale is that for older adults and their families is that these technol, the hardware and the software can often be a barrier.

So there's nothing magical or like that's a secret ingredient of these games, extra games that we really have to capture that specific thing. It's really whatever works best.

And so if I find myself at the point where I have to walk people through the technical aspects of an app or its hardware, we're already too far there.

It's not something that's so worthwhile. It's really what it represents, which is that simultaneous cognitive and physical demand. And the question is, well, in what way would you like that served to you if if it's really Nintendo,

we are biased.

Okay, well, we can go down that route.

Supporting Caregivers and People With Dementia

But even, you know, for people that are really passionate about extra gaming, that's not it. YouTube, just other options, you know, from the comfort of your home, which is, I think what's appealing about that option.

So YouTube and Zoom, YouTube would give you access to I'm sure there are many kind of dual task YouTube videos out there. I've seen some I don't know if there's any.

Not as many as you would think. And then the question is, are they actually good? You know, and so that that's clear. Well, good for whom? And did they do them according to the research?

So there are some YouTube videos, none specifically that I could recommend. There are some technologies coming out that you just download onto your computer or iPad, and they're games specifically designed for older adults where you're stepping left and right in your you're playing games like you would on the Nintendo Wii.

In dual tasking, once again is something that is naturalistically available and skill based activities. And the reason I like skill based activities is games will always expire.

There will always be the next thing. You'll always run out of numbers to count from before getting bored and just be like, Why am I doing this? But you'll never run out of skill development opportunities.

And it's interesting because skill based activities in theater, even things like theater arts can all improve cognition by a common process, which is the cognitive demands that come with skill acquisition.

And it's less likely that these extra games and dual tasks are beneficial just because of a secret sauce. What's more likely is they're more like novel skills.

So anytime I play a new game. There's a set of skills that need to be developed. So skill acquisition is really what we're after here. And so skill acquisition can be acquired in a gaming environment, it can be acquired in a rehab environment, it can be acquired on your own.

Sometimes developing a strength training program is the skill that needs to acquired and further developed. And there's never a sport that has an like a ceiling, a limit unless you're really, really good at that sport.

But even people who have been playing that sport forever, if we transfer Spore, if I take a tennis player, a pro tennis player, and I'll have people that used to play pro sports and put them in a Tai Chi class.

It's a different skill, and now we're adding that variety. So I think when it comes to brain health and exercise, we're really looking to have enough predictability and preferences to be consistent.

But on the other side of that, enough variety to keep our brains plastic in learning. So in terms of resources to you guys offer Zoom classes, I can imagine we do.

Yeah. There are people out there who are like, well, I just I still don't know. Like you've given me a lot of information, but I just want somebody to kind of hold my hand through getting into this and help me figure out what's appropriate for me.

So do you offer that kind of thing? And if so, do you find out more? The first thing I recommend is I spend a vast majority of my time convincing people specifically what we do is not for them.

And the reason I do is because, yes, there is some exciting evidence for what we do, but there is more evidence on

the benefits of other types of exercise that are more accessible to you for a variety of reasons.

And the reason I do that is because if the idea is to develop a lifestyle, we're not trying to create a dependency on these technologies or what we do here.

We're just we think we're just filling a gap of what doesn't really exist right now, but it doesn't mean that's the most important thing. And so I spend a lot of spirituality of my time doing that to empower people to kind of have their own program that they can do multiple days per week for the rest of their lives.

I think that's the most important thing to be realistic about. The second thing is we're developing ways of expanding and how we can get this out there because as you can hear from my hemming and hawing, it's not really as accessible as it should be based on the available evidence.

And so we're developing games to do this over Zoom and we'll be piloting some of that with Miramar, for instance, which we're very excited about. And we're also doing some research studies to increase our understanding of how this could benefit people.

There's also some apps out there like Clock Yourself, which is a clock that can basically call out numbers that you can imagine on the ground or the wall.

There's another one called Switched On that will show you arrows, numbers. Now, some of these apps, if you try to figure out how to use them, like, oh, this isn't worth the trouble, just take a dance class, by all means.

And there's other programs like there's one called Ludo Fit, which is the one that uses your web camera to track your body movements. Of course, these are not appropriate for everybody, but we do offer health coaching, brain health coaching to help customize and create these exercise programs and also other plans like around sleep and nutrition, mindfulness and cognitive training to help people develop a comprehensive, brain healthy lifestyle program, which I know is also amazing work that you're doing as well.

Technology, Zoom Programs, and Precision Exercise Prescription

And so for individuals that just want to develop an exercise program, they can follow some of the guidelines because I will be like a broken record, but I will help people customize that and think through that further.

And then we do offer in-person services as well as over Zoom as well. Fantastic. And then you sort of started to allude to this, but how can this precision medicine model be combined with exercise?

And what you see I know you guys see Dyads so care partners with persons who are suffering with dementia as well as people with mild cognitive impairment.

You've seen a lot of iterations of of people kind of come through. And so what's sort of the ideal way to combine this with the medicine side? Absolutely.

So a precision medicine approach to exercise would be based on certain biomarkers or what available data based on your AP status, based on blood work, based brain imaging is further customize an exercise program.

If we have a DEXA scan, I'm seeing that there's not enough lean mass. And then I'm also seeing that maybe there's some frontal lobe atrophy or executive functioning deficits.

And then I'm also seeing maybe some people who are underweight. So those are all three data points that maybe say point to resistance training, say, hey, maybe we need to do more of that.

Or maybe there's someone with cerebellar atrophy. And it's not to the extent where there's a diagnosis, but it's just a trend on their MRI. And then they're experiencing some other types of executive functioning challenges, like working memory, and they're having some balance deficits.

Well, guess what? We just recommended you a dance class for those three things. So I think precision medicine will help us further what we call exercise prescription.

And just like we would diet, kind of modify some things based on blood markers and things of that regard, as we would with with exercise. Nice. So you are on track to have a Ph. D.

Will you give everybody kind of an update and what your thesis is and what it is that you're working on? I haven't fully decided on a thesis, but I better hurry up and do that because this is the year when I start it. So my most likely thesis is to look at a feasibility study looking at the feasibility, which is like adherence, safety, the user experience surrounding these new games that I've had the pleasure of developing here at PNI with the great grateful patients that we've had and some generous donors to actually develop some games which we've done to provide over Zoom and as well as the ability to send someone a link with no log on, they just click it and they have these exercises and cognitive stimuli on their computer.

They don't have to mess with cameras or controllers or any technology, just their browser, and they're playing these brain body games without any of that.

So I'm looking at the feasibility of these games both supervised with me delivering them, as well as for individuals using them on their own, specifically individuals with mild cognitive impairment and seen, is it safe, is it feasible, is it acceptable as an enjoyable?

So probably something in that in that line of thinking. Fantastic. Well, we are going to put the Pacific Neuroscience Institute is where Ryan is currently coaching and.

Specifically the Pacific Neuroscience Institute Lifestyle Program. So pacificlifestyle.org is the place to reach me. That's exactly what we're looking for.

pacificlifestyle.org is where to find out more about Ryan and what they're doing at the Pacific Neuroscience Institute there. And Ryan, we are just so delighted and excited to start working with you and collaborating with you at Marama.

We're going to have Ryan and some of the people on his team be doing these pilot studies. Actually, maybe you can say that more eloquently than I want to know.

We're excited to deliver a. Lecture collecting for your thesis. Yeah, you are. You're not. You would know about that, but we are. Well, maybe we I mean, we can discuss that, but we are definitely looking at delivering some virtual dual task exercise programs over Zoom for a group of your residents, as well as some customized group brain training and memory techniques, which are two separate classes that will be piloting that Marama.

PhD Research and Collaboration with Marama

So we're really, really looking forward to doing that and it's just such a privilege to be collaborating with you guys. There's so much science. You guys are just highly credible, really amazing stuff going on there, and I so appreciate the work you're doing to help people figure out how they can take very precise and in way get the most out of exercise for their brains.

So thank you. Likewise. Thank you so much for the opportunity.