

MindMotion Neurorehabilitation For Improved Limb Movement | Angela Greene

MindMotion GO [™] is a home-based physical therapy solution that enables stroke survivors to access high-intensity occupational therapy from the comfort of their homes for up to 12 weeks.

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Angela Greene 0:00

With our solutions, you could start in the inpatient rehab, and then it could be deployed home with you. And you just need to have a therapist overseeing your program because it has to be prescribed, it's an FDA-approved device as a prescriptive device, okay?

Angela Greene 0:15

And the therapist has to guide you in the recovery process. Now with some settings, the patient comes in and has an initial evaluation, let's say, outpatient. And then they go home, they could have this device sent home and it could be completely remote.

Angela Greene 0:29

What we call asynchronous, they don't have to come back in. The therapist could do a telehealth consultation and we could see your program could see whether you're doing your homework or not.

Intro 0:42

This is the recovery after stroke podcast with Bill Gasiamis, helping you navigate recovery after a stroke.

Introduction - Angela Greene

Bill Gasiamis 0:55

Hello, and welcome to episode 254 of the Recovery after Stroke podcast. My guest today is Angela Green, who is the lead therapy Integration Manager at MindMaze, a digital therapeutics company that is building a platform for universal brain health and recovery.

Bill Gasiamis 1:13

Previously, Angela was an occupational therapist for about 20 years. And she worked with a variety of patients from traumatic brain injury to stroke and dementia, as well as Parkinson's disease. Technology is changing the way rehab is practiced for people with brain injuries. And it's changing the results as well. Angela is also at the center of that shift and those innovations. Angela Greene, welcome to the podcast.

Angela Greene 1:41

Thank you. Thank you for having me tonight.

Bill Gasiamis 1:43

My pleasure. Thank you for being here. Tell me a little bit about your background before we get started in the conversation.

Angela Greene's Background

Angela Greene 1:50

Okay, well, I've been an occupational therapist for almost 30 years. My specialty is neuro rehab and neuroeducation. I'm a clinical educator, I teach other clinical professionals vestibular rehab, as well as upper extremity for the hemiplegic arm, and different dynamic splinting techniques that are available to try to increase function.

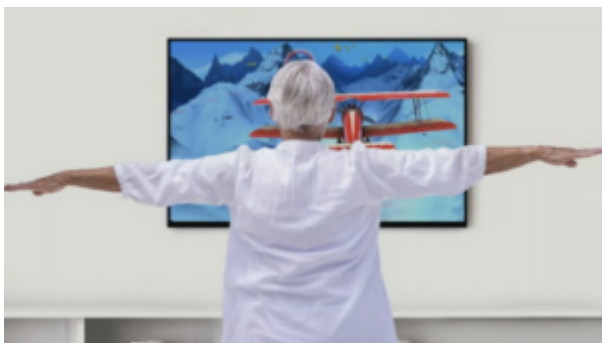
Angela Greene 2:15

And I also have a background in health informatics, the electronic medical record. So I'm kind of a Jane of all trades, but leadership background in operations. And the reason I got involved with that was because I have a vision in my mind of what I think great clinical care can be.

Angela Greene 2:34

And I think we could deliver it. And so far, I've been pretty successful with it. And I am the lead therapy Integration Manager here in the United States for MindMaze, which is a neuro digital prescriptive therapeutic device. We have different solutions that we offer people for high dose high-intensity neuro rehab,

What is high-dose high-intensity rehab?



Bill Gasiamis 2:55

High dose high-intensity neuro rehab. Now when I hear high dose, usually that sounds like I'm taking the high dose medication of some sort, but you're talking about high dose rehabilitation. What is that specifically? What does that mean?

Angela Greene 3:10

So most times, a lot of the clinical research is indicated. If you're in inpatient

rehab, you may move your arm, and your upper extremity 20 times the entire day. And most of that occurs during the actual therapy session. At lower extremity, you may move your lower extremity with ambulation, maybe 300 times over 24 hours.

Angela Greene 3:32

And all of the evidence indicates that is not enough. You need to be moving 1000s of time you hear like take 10,000 steps, you need to be doing that with your arm too. And there's not a lot of opportunity for people to do that. So with our solutions, you're moving anywhere from 40 to 60 times a minute, which is a very high dose of high intensity.

Bill Gasiamis 3:55

Is that something that's done in the clinical can that also be done at home?

Angela Greene 4:01

Well, that's one of the things I love about our solutions is that it's thoughtful about what starts in the clinic. And it could be deployed to the comfort of your home. So I joke around and say you could do your therapy in your bunny slippers in the comfort of your own home.

Angela Greene 4:16

You don't have to load up and worry about transportation if you've had a stroke because many people can't drive or they're dependent on caregivers to take them. So you could do it right in the comfort of your living room and not have to worry about all those other things.

Bill Gasiamis 4:31

And many people are in remote locations.

Angela Greene 4:35

Yes. And that definitely could help. I've lived in some pretty remote locations like Alaska, and they did telehealth up there but this would be the ideal product that you can take home with you and use for 12 to 15 weeks, five days a week.

Angela Greene 4:51

You know for about a half-hour 20 minutes to a half-hour day depending on what your therapist has to be prescribed by a therapist. So a therapist is always over for senior care, but it's a prescribed home exercise regimen.

Bill Gasiamis 5:04

Okay, so one of my coaching clients, I just got off the coaching session with them now, he's a gentleman who is roughly in his 80s, and had a stroke. And one of the conditions that he has to deal with is that he's, I think it was his left hand, we'll go with the left, his left hand is not functioning as it was before the stroke.

Bill Gasiamis 5:27

And as a result of that, it's quite heavy, and it's causing an impact on his shoulder. Now he has it strapped, in some situations to minimize the impact to the joint. But then having it strapped means that it minimizes the ability for it to be used, and therefore it's increasing potentially, the possibility of the loss of use of that arm and it's definitely not rehabilitating it. So is that the type of person who is a candidate for this type of product, this type of solution?

Angela Greene 6:02

For these, you have to have some range of motion, and some movement available. It doesn't have to be great because the games can be calibrated to what's available range for you. So if you can only move five to 10 degrees, you could still play some of the games, and it has other benefits.

Angela Greene 6:20

So it's not just the upper extremity. It's also the lower extremity like sit-to-stand reactive stepping. I mean, it has a lot of different things in it. And as well as hand and finger individuation. We have a wonderful new device that allows you to apply pressure, and it monitors the pressure application and the release. And it's really cool.

The MindMaze: MindMotion GO rehab



Bill Gasiamis 6:41

I see. So when I was in rehab, and I was learning how to use my left side again,

walking again, and using my left arm, I use the Nintendo Wii to play Wii Tennis. So are you talking about a product that is similar in nature to that type of device where I'm interacting with something that I'm wearing and a screen in front of me, and I'm playing, for example? Well, in this case, it was tennis is that the type of solution that you're talking about?

Angela Greene 7:18

It's similar but distinctly different, same in that it's fun to play. So people are very engaged and motivated to play it. I love that it gives people a chance to own their own recovery and empowers them instead of being told no and sit and don't do, we're encouraging you to do it.

Angela Greene 7:37

This is a version of extended reality. So you have many different types of virtual reality. So you may have the immersive like what you wear the goggles, that's great. As for vestibular rehab, you may have augmented reality, like the PokemonGo, where you could still see the reality around you. But there's an image projected, like the Pokemon.

Angela Greene 7:55

I've seen some cases of a product that projects images that is for Parkinson's patients and helps them navigate stepping. And that's a wonderful idea. This is an extended reality. So it only takes a short period of time for your brain to extend your personal space like this is my hand, it's in front of me and I know it's in front of me.

Angela Greene 8:15

But with a little trickery, and the use of the extended reality, you can project yourself onto the screen and become that avatar on screen. And the difference with the MindMotion, though, in particular, is that it can be calibrated very specifically to what your abilities are.

Angela Greene 8:32

And that's the one that can go home with you that gives you that high dose of high repetition. It also produces a documentation system that you could see how you're performing. From a range of motion assessment to the quality of movement, are you compensated and how much are you compensated?

What is the MindPod

Angela Greene 8:48

And the coolest thing too is it's no marker on you. It just tracks what you have you know with a full body motion camera or hand or this other device called the IZAR, the other solution that we have immediately after having a CVA. And ideally, as soon as you're medically stable, you can do this seated or standing it's called Mind Pod. And the whole premise of that one is based on exploratory motion.

Angela Greene 9:12

Because most of the studies on stroke recovery have been done with primates. And it's typically very task-specific, pick up a pellet, stick it in your mouth. It's not ever been just play. And if you think of babies that babble, they eventually form speech and they're just playing with sound. So it's the same kind of concept except for the upper limb.

Angela Greene 9:31

And anything you do in mind Pod, you move a dolphin through a beautiful immersive room, it's a multi-sensory approach, you have sight and sound happening, as well as the initiation of motion. And that protocol is for three weeks, five days a week and it's pretty intense. It's 60 to 90 minutes a day. By then you transition to like MindMotion Go to go home with it to continue your progress.

Bill Gasiamis 9:54

Okay. So, for example, the particular person I was talking about is based near Sioux Falls in South Dakota. Now, I would describe that in the middle of whoop, whoop. Now I'm from Australia, that's a very Australian way to describe the middle of nowhere.

Angela Greene 10:12

Whoop whoop, I have to remember that one.

Bill Gasiamis 10:15

Yeah. Where's Sioux Falls, South Dakota? Middle of whoop whoop. So it gives people an understanding that it's potentially in a remote location. That means that in order for these guys to attend their sessions, with their therapists, OT or PT, they've got to drive for an hour and a half to that appointment and an hour

and a half home.

Angela Greene 10:41

And, that's if the weather's good, yeah.

Bill Gasiamis 10:43

And that's if the weather is good. And that's it if the patient if the stroke survivor is in physically fit enough condition to do so. And because there's a challenge around toileting, there is timing, it has to, you know, we have to play this beautiful role of timing, everything so that when that person is traveling, they don't have to have a toilet break.

Bill Gasiamis 11:10

When they get there, they can have a toilet break. And when they get back, they're gonna have a toilet break. But anyway, the trip in between is an issue. So the remoteness of this gentleman's location is a barrier to regular and appropriate rehabilitation, and getting people to their home is just as big as a barrier because they've got to find the right person, and then they've got to somehow get them, there and it becomes extremely expensive.

How to get started with MindMotion GO



Bill Gasiamis 11:41

So in the situation where America is such a vast country, just like Australia, is and there are people scattered everywhere. How do you guys get in front of people who are located in remote locations, and then make it easy for them to A, access to technology? In the first instance, where they have to see somebody I suppose, and then, in the second instance, you know, how does that end up in their home and who sets it up for them?

Angela Greene 12:13

Sure. So in traditional health care, you may go through an acute inpatient stay for three days in the hospital, once you're medically stable, they'll discharge you, ideally, to an inpatient rehab facility, and you'll be there for 10 to 15 days, this is again traditional, where you get three hours of therapy, one hour of upper limb rehab, with OT, and then the rest of the time, you're twiddling your thumbs, you're just sitting around, right?

Angela Greene 12:40

And then you get discharged to the couch at home. And if you're lucky, maybe you have home health, and they see you once, twice, three times a week, extraordinarily rare, especially in the outlying areas, and in rural areas, okay. So you're supposed to be working every day, 20 to 30 minutes a day, for your recovery, as much as you possibly can move in 1000s of times a day.

Angela Greene 13:02

So that just doesn't happen. And the evidence supports it. But insurance doesn't cover it, Medicare doesn't cover it. It's just very frustrating. With our solutions, you could start in the inpatient rehab, and then it could be deployed home with you. And you just need to have a therapist overseeing your program, because it has to be prescribed.

Angela Greene 13:22

It's an FDA-approved device as a prescriptive device, okay? And the therapist has to guide you in the recovery process. Now, in some settings, the patient comes in and has an initial evaluation, let's say, outpatient. And then they go home, they could have this device sent home, and it could be completely remote, what we call a synchronous, they don't have to come back in, the therapist could do telehealth consultation, and we could see your program, we could see whether you're doing your homework or not.

Angela Greene 13:49

That's the other thing. You can't make excuses and say my dog ate it. You know, we're like, you know, we prescribe this much therapy for you. And you only did like 10 minutes, what's up? You know, or somebody's having a harder time the levels can change. We could adjust levels, challenge levels, difficulty duration, and things like that. Recalibrate it if they're improving performance, so we could do that all remotely which is a wonderful thing. And as I said, typically somebody hangs on to this for 12 to 15 weeks at home.

Bill Gasiamis 14:19

Okay. And that gives you real data that you can actually look at later, after a certain number of weeks, and you can determine from that data, whether improvements can be whether improvements have occurred, what you need to tweak etcetera.

Angela Greene 14:32

Every time somebody plays it uploads information. So we have that data. As soon as you're done, and you log out, it's there. As far as how it works for deployment to home, we ship the unit to home once a person is identified. We send it directly to the person's home it typically takes five days to arrive depending on the shipping location, and then we schedule an appointment with one of our customer service reps.

Angela Greene 14:55

So that helps them navigate a walk through the setup process. It's not much more difficult than setting up an HDMI TV or VCR. It's a Roku stick or you know, or fire stick or something like that it's not much more complicated than that. Now you do have to have internet access. And I know that's a barrier for some people.

Angela Greene 15:14

But here the FAA has agreed, like, coerced, I guess, I don't know what the word is, with these different companies that are internet providers to provide low-cost internet and rural areas. So you know, you have to eliminate all the barriers, what are the potential obstacles for people to use this? As we navigate through that we try to figure out what are the options.

Bill Gasiamis 15:36

Okay, so there could be a process that you have to go through to get people finally onto it, for some people that be a slightly longer process, especially if they have some of those barriers that they are limited by and then some people could be a shorter process to getting evaluated and then having the product in their home.

Angela Greene 16:01

Yeah, we're working with some clinical partners right now that have kind of the continuum from inpatient rehab to home, and talk, I was just talking with them yesterday. And they said we know five days in advance that this person is going

home. So as soon as you know, the trigger has been pulled on, they're being discharged.

Angela Greene 16:20

We start planning on sending this to their house, so they're not more than a day or two without the device. They've already been introduced to it and impatient and they're going to continue without patient oversight.

Angela Greene 16:31

Sometimes the barriers are like getting a physician's orders to be able to get in to have therapy. If you've been discharged from therapy, you have to come back in. Sometimes therapy clinics are overwhelmed. I live in Florida right now, and I could tell you we call it Snowbird season. Everybody's coming down here. You're not having an appointment anytime soon. It's really tough to get in.

Bill Gasiamis 16:50

Right? Okay. So Snowbird season, that's the season where everyone comes from the snow to Florida to warm up.

Angela Greene 16:58

And then we want to get hot. Yeah.

Bill Gasiamis 17:01

Then it goes from no availability to an abundance of availability.

Angela Greene 17:05

Yes. It's very seasonal. Yeah. Understand?

Bill Gasiamis 17:09

Okay. So if somebody was to contact, the isn't MindMaze, would they contact Mind? Okay, so do you guys handle all of that process? Or do they have to do a lot of that work?

Angela Greene 17:23

Well, basically, they have to be under the care of a therapist. So what the work that is responsible on the patient side, is to have a consultation with their physician, and request a physical therapy or occupational therapy order for outpatient services if they've been discharged if they're out of the system. Otherwise, if they're already under treatment, there's nothing special, no special

order that has to be written for this, they just have to be under the care and agreement of a clinician who's agreeing to oversee their care.

Educating clinicians on how to use MindMotion GO



Bill Gasiamis 17:52

And that clinician, occupational therapist, or physical therapist isn't necessarily somebody who's set up and previously used MindMaze or knows about MindMaze, they can just be somebody who is prepared to be the middle person between you and the patient, is that how it works? Do they also support them in that rehabilitation process?

Angela Greene 18:16

If they were going to partner with us and have the devices deployed? My role as a therapy Integration Manager is just that train the clinicians on how to use it. Because of all of my therapy integration managers, I'm the lead one, we have several spread among the United States and around the world. But all of us are clinical subject matter experts in neuro rehab.

Angela Greene 18:38

So we could really speak directly to the clinician and help educate them on how to optimize the usage. And that's so important because, without it, they may miss some of these opportunities, like some of the games might be hand and sustained attention to the task at the same time where you could do a balanced training.

Angela Greene 18:56

Well, it looks like a hand or arm program, you could be doing dual-task training, which is a higher level of education and experience, where you could put someone on a foam pad for a big balance challenge while they're focusing and doing

multiple things at once. So you're really stimulating the brain.

Intro 19:13

If you've had a stroke, and you're in recovery, you'll know what a scary and confusing time it can be, you're likely to have a lot of questions going through your mind. How long will it take to recover? Will I actually recover? What things should I avoid? In case I make matters worse, doctors will explain things that obviously, you've never had a stroke before.

Intro 19:34

You probably don't know what questions to ask. If this is you, you may be missing out on doing things that could help speed up your recovery. If you're finding yourself in that situation. Stop worrying, and head to recoveryafterstroke.com where you can download a guide that will help you it's called seven questions to ask your doctor about your stroke.

Intro 19:56

These seven questions are the ones Bill wished he'd asked when he was recovering from a stroke, they'll not only help you better understand your condition, they'll help you take a more active role in your recovery, head to the website. Now, recoverafterstroke.com and download the guide, it's free.

Angela Greene 20:15

For recovery.

Bill Gasiamis 20:17

Okay, that sounds good. So by the way, I just want to make it clear, this is not an advertisement, for MindMaze or for this product, my job, my job is to bring awareness to people to have solutions that help them because this particular client of mine, they don't have access, they have all the limitations you can possibly imagine, to accessing good solutions.

Bill Gasiamis 20:39

And the gentleman according to everybody has hit the plateau, we'll talk about that in a second. And he's in a remote location. And they're doing their best to access services, and it takes a long time to get to services. And there's a whole bunch of challenges behind it, right? So my job is to really kind of bring awareness to solutions that exist, that people don't know about.

Bill Gasiamis 21:07

And for whatever reason, have not, maybe they're fairly new. And they haven't really made it out into the mainstream yet. And not everybody knows about it. And I like the idea that in the middle of this process you know, you guys require or encourage the support of an occupational or physical therapist in some way, shape, or form.

Bill Gasiamis 21:31

Because, again, outsourcing, I've heard of a lot of products that are similar in nature to what you're describing, perhaps they're different. And they've outsourced the product to the individual, it gets sent to the individual at their home, and then they are responsible for taking on all of the duties associated with doing the training, you know, finding the time allocating the time, etc, and then managing all the rest of the process.

Bill Gasiamis 21:58

So I like this idea better. So let's talk a little bit about people who reached that plateau. So typically, my frustration with stroke rehabilitation is if you're a certain age or above, and you reach what their medical industry calls the plateau, you're essentially sent home and you're expected to fend for yourself, which I think is so strange and bizarre and wrong. Because when somebody has hit the "plateau" that's when the work needs to start.

Bill Gasiamis 22:39

I feel that that's when the work needs to start. So the brain has done all the work to get them to the plateau. So far, you know, we've had that three to six months of the penumbra coming back online and things healing, and the occupational and physical therapists, not personally so that please, I don't want anyone to take this personally, that I'm having a go with them. They get all the credit for moving that person through the initial recovery and the gains that they've created.

Bill Gasiamis 23:14

And then when it gets too hard, everyone says, It's too hard. You're on your own, why don't you go home, and we'll let the caregiver be the person who's totally responsible for supporting you and helping you and basically go as you said earlier goes sit on the couch. And those people are the least likely to be able to support stroke survivors in overcoming that.

Bill Gasiamis 23:37

Because they have no background in rehabilitation, they have no background in stroke, they have no background in anything. They're just a regular person going about their daily life. And they've been stuck with being the caregiver for somebody who has had a stroke, and they have no support.

When does MindMotion GO become necessary?

Bill Gasiamis 23:54

So tell me a little bit about when does your product come into the picture? Does it come? At the beginning of the process of rehabilitation? Does it come after the plateau? Does it come many years later, when is the ideal time to implement something like this?

Angela Greene 24:13

Well, according to the neuroscience test that we have, everything we have is evidence-based. And our company is a group of neuroscientists and neurologists. And really focusing on the optimum period like day one, once you're medically stable. After a stroke, that's when your optimum Neuroplasticity occurs up until about 30 days right after the initial stroke.

Angela Greene 24:37

That's really your biggest opportunity to get make as many gains as you can. Okay, so that's when you need to be moving 1000s of times a day and not sitting in a wheelchair somewhere. And that continues to improve ours till about 90 days. So we have that like I said the mind pod solution that's usually in the clinic itself, and then sending the unit home with somebody for 12-15 weeks.

Angela Greene 25:01

That being said, we're currently doing some research where we run labs with David Petrino at Mount Sinai in New York. And his study is chronic stroke, six months post or greater after a stroke. And his program is pretty much almost all asynchronous. So you go in for an evaluation and the unit gets set home and you get set up and you have the unit to work with.

Angela Greene 25:23

And I can tell you have a clinician new and not as skilled and now has much more skill many years on because I hate looking at a patient and not being able to help them, I feel it's my responsibility to learn what to do to help that person, I don't just give up on somebody. And when you described your 80-year-old friend who might have a sunblock shoulder and some weakness in there, I would point to the therapist and say you don't have enough skills to really support that person.

Bill Gasiamis 25:54

I would agree.

Angela Greene 25:56

And so my lack of skills should not dictate your plateau. That really upsets me. And I think we have a responsibility to our clients, we can't fix everything. I mean, we can't know. But there are some things that I would do for that client in particular, that would help them start getting activation of his rotator cuff muscles and start supporting it. I mean, there are so many different things that can be done.

Angela Greene 26:18

Rather than just go stick a fork and you're done. Now, insurance is notorious because we have to continually show progress for most disease processes. I know somebody with Parkinson's went after Medicare and said I have a right to sustain the level that I'm at. And I mean, it may be a maintenance-type program, as opposed to a rehabilitation-type program.

Angela Greene 26:41

And, you have to really challenge the system, you have to be an advocate for your own care. But I can tell you, if I suffered a stroke, one, I'd obviously be very frustrated. I'm not a patient person I'm from New York City originally. But I would tell you, I would do everything in my ability to recover as much as I can. And I would not wait for them to tell me what to do. That's just my nature. You know.

Bill Gasiamis 27:08

It's interesting. You're, you made an interesting comment about insurance needing to seek continuous gains. Gains after recovery are not a capitalist economy. It's not about you know, the let's let's do another 10%. This year, next year, and forever after that the gains in stroke recovery mean much more than that.

Bill Gasiamis 27:32

And keeping and maintaining movement, once it's achieved, or once it's reinstated, or once it's recovered, is really, really important. And absolutely, there needs to be more to help people maintain their health rather than their health going backward.

Bill Gasiamis 27:50

Because then if there is an insurance policy that they would have to claim back on that, wouldn't they, if they ended up becoming worse and worse and more and more unwell? But still, a situation where insurance has to pay out and support them.

Angela Greene 28:05

If you have one in four people having a second stroke, what can we do to prevent that if we could give them cardiovascular activities and keep them active and empower them? With the empowerment because I'm an occupational therapist, I'm very much aware of what happens when people lose the ability to take care of themselves, they get very depressed, very, very depressed, very frustrated myself, I was in a terrible accident when I was 23.

I was superhuman climbing, doing all kinds of stuff. And then I was flat on my back, I lost my complete identity of who I was. And I got very depressed. And it's nothing like having a stroke to that degree. And I don't mean to insult anybody. But I do understand the process of you having to figure out who am I now.

And what defines, you know, how do I define myself? Because I go up to people, I said, What do you do, they tell me what they get paid to do. They don't tell me I got up this morning, I brush my teeth and I wipe my own butt and I dressed myself and I made breakfast or paid my bills or drove a car.

They don't talk about all the things that help define who we are that occupy our time. And I think every single one of those helped us to become you know, the whole person. And we have to look at the person holistically, not just okay, you didn't make that little tiny progress. I want to see people sustain the gains. And a really good thing I posted this on LinkedIn. And they did research in inpatient rehab.

And they said people who get discharged, make more progress with PT while they're in inpatient rehab, and then they get home and they go backward. Yes.

And with OT, they make slower progress. But when they get home, they actually continue to progress. So the question is, why is that? Is it because people were horribly fearful of falling when they get home and they don't have that level of support and encouragement? That's a possibility.

Right? Is it that OTS is awesome and we just you know, know what we're doing, and no kidding? No, I just think because we're very functional. Yeah, we're very functional. So you have to understand, you know, the nuances of that. But I would never ever satisfy for less than what I was capable of doing. And I don't expect my patients to compromise either.

Bill Gasiamis 30:14

Yeah, look, I think all of what you're saying is relevant. And identity is something that's important to try and help a person maintain rehabilitation from the supposed plateau and beyond the plateau will help with all sorts of things. And it decreases the demand on the medical system if you get people better, and you give them the opportunity to get better for longer.

Bill Gasiamis 30:38

Because if they're better longer, and you don't send them home, well, then you're also not impacting negatively on the caregiver. And there's a possibility that a caregiver, another possibility, I think it's a proven statistic that caregivers usually pass away or become ill as well. And as a result of that, then you go to people that are incapable of supporting themselves because of the stressful situation that the caregiver finds themselves in.

Bill Gasiamis 31:06

Or then they neglect their own health and well-being to help the other person and then they end up in a similar situation or worse.

Bill Gasiamis 31:16

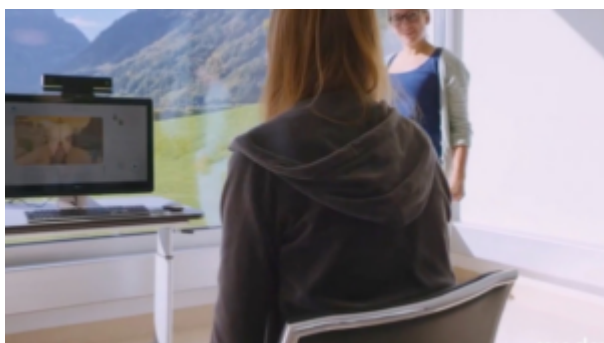
So it's intuitive, I would say it would be the intuition would say that you have to make and support people to be better for longer so that you've got fewer people coming back into the system that needs support. The exact opposite is happening.

Angela Greene 31:40

Common sense, right? And then just look at the evidence, why are we doing rehab at all? Yeah, if we're not following what the evidence, the evidence is that high dose, so it's rare if you're going to get somebody an outpatient has to be seen five

days a week, it's almost unheard of unless they're private pay or something.

How long does the MindMotion GO therapy take?



Bill Gasiamis 31:57

The particular gentleman that I mentioned, a couple of times did get initially a full-on amount of rehabilitation that went that long. And then that went for five days a week, etc. And then it stopped. And he has been curious about how to reactivate something along those lines because he's very keen to get on his feet again, become active, and participate in his household and his life again.

Bill Gasiamis 32:29

But he hasn't been able to find a solution to reintroduce the level of activity back into his life, because he doesn't have somebody supporting him through that. If somebody does go down this path, and get a MindMaze-type device, how much? How much time does the occupational therapist that sort of sits in between you and the patient how much time do they have to put into that particular therapy?

Angela Greene 33:07

To run that kind of program? So they have to do an initial assessment, because of course, you want to baseline that and figure out, you know, are we going to progress? You know, where do we start, then it probably takes once they're trained in how to use the unit, which I usually spend a good amount of time helping people understand all the benefits of it, and that it is included in there.

Angela Greene 33:31

And implemented in their approach their therapeutic approach to create a great home exercise program. So once they have that setup, it could take 15 minutes total, to set that up 15 to 20 minutes in the clinic, and then the patient goes home

with the device. And that's pretty much the remote monitoring of the patient like through telehealth.

Angela Greene 33:54

Or they could come in once a week to the clinic or once every two weeks and have an upgrade and 15 minutes to the time that they're there. Maybe an hour could be spent addressing upgrading their exercise program, which is very typical, and therapy. We always like to look to okay, how you do with the home exercise like what's progress. You let's move it ahead, you know.

Angela Greene 34:15

So it's not different from what we're used to doing. It's just a different way of delivering it. And the other thing I want to say is if you look at home health, they don't come out a lot, right? If you don't need medical monitoring, and you're still homebound, this is a game changer. This is an industry disrupter because you could actually send somebody home with this device. And they could have five days a week in their homebound.

Bill Gasiamis 34:40

So in the case of this particular gentleman at home with his wife, what role would his wife play in this process?

Angela Greene 34:53

Is she a tech wizard?

Bill Gasiamis 34:55

She's not a tech wizard but in actually going through the process together So getting him, supporting him and helping him get the exercises done, etc. So, is it necessary for our caregiver to be involved in that process as well? Is the better question, actually?

Angela Greene 35:16

I guess it depends, they have to be able to somebody's using they have to be able to follow directions, like to step commands, and have some active range of motion, those are some of the precautions that we'll look at over age 22. No history of seizure activity, because we certainly don't want to make things worse, if it's a standing activity, and they're wobbly.

Angela Greene 35:35

And this is up to the clinical reasoning of the therapist providing the oversight and guidance of the program. They could do seated activities as well as standing. So we have flexibility in our programming, but basically, you turn it on, you'll press play, and you go and there's your program. It's on TV.

Bill Gasiamis 35:55

Okay. It's not a device that you wear on your head or anything like that.

Angela Greene 35:57

No, it's not an immersive experience. And a lot of people don't tolerate the goggles because they get really dizzy doing it. So that's what I love about our solution is that you're not immersed, you're still looking around your room, and you feel very comfortable with it, I feel comfortable as a clinician sending it at home, I would not send somebody home with the goggles, because I'm pretty sure they're gonna fall, I would fall and I don't have a stroke.

Bill Gasiamis 36:21

Yeah, I see what you're saying. Okay, so then, are there any wearable parts? How do you interact with the screen, when you're sitting way over there, and the TV's over there?

Angela Greene 36:33

So you need about six feet from the Kinect camera. And it's a full body motion camera. So you don't have to attach anything, it'll start the game and you start playing the game, if it's moving your arms, it's moving one arm, if it's driving, if it's stepping on little monsters for reactive stepping, which is a great thing for, you know if you start to lose your balance, and you need to take a step quickly to save your balance.

Angela Greene 37:00

That's what it's about. You could do those activities, but basically, you just play. Because the therapist has already calibrated it to you and to your level and where you're at, and adjusted the gameplay. That's the clinical reasoning that it's needed.

Bill Gasiamis 37:17

Okay, so that's what I'm missing. So the setup is calibrated to the specific individual and their body, etc. And it knows, it recognizes them and knows when they're moving their hand and their leg and all that type of thing.

Angela Greene 37:30

Yeah, it indicates like a little circle, like basically, you'll turn green, that it's on target, even if I'm a clinician standing with you. It won't pick me up at all. And I'll be like purple, there'll be bringing, they're the target. And the other thing to consider is while you may be able to complete one full range of motion, I might be able to come all the way up my arm 180 degrees one time.

Angela Greene 37:54

What do I look like after doing that? 60 times a minute. Am I doing it with all this body of English and compensation? Because we don't want the compensation, we're trying to train away the level of impairment. That's what we're really trying to do. So I may calibrate it a little less to give you the opportunity to move maybe half that distance, depending on what you tolerate, and what you look like when you're playing. And then you're successful. And you start building more strength and endurance.

Bill Gasiamis 38:21

Yeah, so you want isolation, you don't want lazy movement.

Angela Greene 38:27

Well, we call it compensation because people will move any way they can to achieve the posture. So if I asked you to touch your head, you may do you know this whole thing or, or this, you know, the synergic patterns that people develop up like this to try to pick up and bring something to their mouth, we want to discourage that.

Angela Greene 38:47

And if you could train that away to begin with, then people tend to not go into those patterns, or stay in those patterns for as long. Because when I first started my career, there was no such thing as TPA. And if you survived a stroke, most of the time, that was pretty catastrophic. Yes. And then once TPA was introduced, I saw a much lesser level of impairment than I did before. But you still have impairment going on.

Bill Gasiamis 39:15

Yes. TPA has been a game-changer. There's no doubt about it, there are a lot of people who wouldn't be around if it wasn't for TPA. And what's interesting about TPA is sometimes I speak to the stroke survivors who have had TPA administered

and then they kind of take the stroke or that wasn't a big deal. I was home two days later.

Bill Gasiamis 39:42

They have fatigue and other things that don't realize the seriousness of what a stroke means and what that could have been like. And they kind of take it as a knee injury. Oh, well, I was injured for a couple of days. I was out of action. And then I got better. I was at home and then I have this, they misunderstand the potential long-term effects of even that, "small" or mini or minor stroke.

Angela Greene 40:13

Because there's a chance you'll have another. And I tried to explain to people that once you have, it is so serious to have it addressed as quickly, like any of the signs we call fast, or you know, the facial weakness or anything like that, it's so important that you get to the hospital because that TPA periods, only three, three hours, yes, from the time you walk into a hospital, so you don't go to sleep and take a nap.

Angela Greene 40:37

If you don't feel good lying down, you may not wake up. And then if you could get there within the three hours, and they can administer it, that's great if you're a candidate for it. The other problem is that once you start, you know, the blockage happens that tissue dies, right in the immediate vicinity. But as that tissue dies, that releases chemicals that destroy further tissue. So I always call it like the avalanche of disaster. Why do you want to go there? If you can prevent it? Do you know?

Importance of maintaining rehabilitation beyond the plateau

Bill Gasiamis 41:03

Yeah, I agree. You know, when we were talking a little earlier about people who have had a stroke, and they've, they're in their plateau, and or beyond the plateau? What kind of results? Have you seen people like that? Can you give me some information about the type of results? You've seen with people who have taken up your program, beyond the plateau?

Angela Greene 41:31

I think when you get more body awareness, you get a better quality of motion and movement. Now, neuroscientists will say that Neuroplasticity pretty much ends very quickly. Like I said that 90 days, anecdotally, in my career, I've seen people, many years post-stroke, or post-brain injury, and still make gains.

Angela Greene 41:53

If they have a painful arm, and they couldn't really function initially well and participate well in therapy, just different approaches to us have helped them. But with our products, with the like my motion going home, one, I think it gives them more body awareness. I think it gives them more cardiovascular activity.

Angela Greene 42:15

I think it empowers people to be successful because a lot of people avoid exercise because they feel like they can't be successful. And I think the quality of the motion overall, when you have that increase, and the repetition and the endurance builds and the strength builds, then the movement quality improves.

Angela Greene 42:32

So you get a better quality of motion. Everything from hand function, you know, if you could just use your index finger, your middle finger, and your thumb, those are your moneymakers, you know, those, the little finger and the ring finger are more stabilizers and assist assistant holding.

Angela Greene 42:50

But this is your dexterity, you know, if you can use those and recover function there, you've got a great portion and a great portion of hand control and ability to participate in your activities of daily living.

Angela Greene 43:03

So if you could do that, if you could get a little bit more in the shoulder a little bit more in the elbow, I mean, it means that all the difference in the world, you know, or be able to extend your arm out to the side. Because now you can pull your pants up or wipe yourself, you know, it's simple dignity issues, you know.

Bill Gasiamis 43:19

Yeah. And you've seen that there has been the restoration of additional movement, and people have gained movement and use of limbs and fingers, etc, way beyond the plateau.

Angela Greene 43:38

I like to think about it in a way that sometimes the right approach has to happen at the right time. And maybe they didn't have the opportunity to have the right approach previously. So I think you're still gonna see gains, no matter what you do if you have a good qualified person working with you. But having the opportunity to do that high dose, high intensity definitely increases your strength, definitely increases your endurance definitely increases your cardiovascular. Just because you're up and moving not sitting on a couch.

Bill Gasiamis 44:07

Yeah, some people will say I've got fatigued, debilitating fatigue after my stroke, etc. Does this help with getting people to move beyond that fatigue as well?

Angela Greene 44:18

It does because you can pause the games at any time. I mean, and they could be, you know, titrated for you to play maybe, you know, 30 seconds and you take a break and then you go at it again. I mean, it's very flexible. It's very approachable. You just need a skilled clinician to help deliver it for you.

Bill Gasiamis 44:37

Okay, is this something that people can access in a nursing home scenario? So there's another gentleman who follows the podcast, and he's I'm going to call him a fan. If he probably listened to this episode. I'm gonna call him a fan of mine, and he might get kicked out of that. And he had a stroke and then he ended up in locked-in syndrome.

Bill Gasiamis 45:00

And it took him a while to get out of locked-in syndrome. He was actually on the podcast. And when he joined me on the podcast quite a while ago now, he spoke with a machine we pre-recorded. I sent him the questions, and he answered them on his machine. And since then he's told me that his things have improved somewhat, and he's standing up more often.

Bill Gasiamis 45:24

And he's using his arms further and better. But the majority of his day, I don't imagine is high-intensity, rehabilitation. Is that something that can be supported and installed or delivered into a nursing home room? For example, would there be occupational therapists in that environment that would be able to participate in

this?

Angela Greene 45:51

Absolutely. We have, like this IZAR the pressure-sensitive device I was talking about, you could use it laying down you can use it seated. It's great for hand activation. And like I said, finger individuation attention to the task. And I've worked with several folks that I've had locked in. And I've helped set up those devices like communication devices for them as well.

Angela Greene 46:13

And this is something that they could control and use while they're in bed, they just have to be able to have their body uncovered. So you can see your limbs, like your arm or your legs, so you can't have to be covered up with a sheet. If you're using the whole body motion camera, or the hand camera, it just has to be unobstructed, because it'll pick up on the body motion itself. The eyes are Bluetooth enabled and have an accelerometer in them. It's pretty cool.

Angela Greene 46:39

So it's not camera dependent. So it's a little bit more flexible for some folks might be a lower level. And you could do patterns of motion and all of that with a and have some fun. I've had folks use it on the edge of the bed when they're recovering initially, just for trunk balance and sitting balance.

Angela Greene 46:58

I mean, it's a great activation for that you could even do an embed side-to-side and play some of the games. That way, you just have to have a TV high enough that you can see what's happening. And the cameras are set up high enough. Okay, so just like put an audit cart with an HDMI TV. And you could just wheel it right into a patient's room.

Bill Gasiamis 47:16

Okay. Fantastic. This is something that, you know, I'm trying to I'm asking you these questions. So we can give kind of people visualizing and sort of seeing how this thing would be used or, or how it'd be installed or how it would be interacted with. And that's kind of the hardest thing about an interview is how do I get that message across?

Angela Greene 47:37

To visualize it? Yeah.

Bill Gasiamis 47:39

So we're going to, eventually, we're going to send people to the website and give them some places where they can go and see it in action, I suppose there are some videos and all that type of thing. That'd be helpful because that'll take the responsibility off me

Angela Greene 47:57

Think of a TV. Right? And the question is in a clinic, do you want to stay in one place mounted to the wall? Or do you want an undercard where you can take it to the parallel bars and use it with the patient?

Angela Greene 48:09

Okay, so think of a TV and it's a little computer unit, it's about the size of a DVD player that's with it. The Xbox Kinect camera most people are familiar with, it's that little bar kind of setup. But if you're laying in bed, you have to have it high enough that you can see the television and the camera, so that it's a pretty compact system. It's actually pretty mobile.

Bill Gasiamis 48:31

Okay. And then it can actually be taken into an occupational therapy room where there are parallel bars and all the different things in there. So we came and interactions can happen in therapy at the same time.

Angela Greene 48:48

It can be done like that at Johns Hopkins, they have an upper extremity lab. And they have it set up there for patients to use. They have the latest and greatest like Super Robot, tech. exoskeleton tech and all this and a lot of it is too cumbersome to put on.

Angela Greene 49:04

And what they find is their patients really love our product because they could go in there with maybe a tech get initially set up and they could play. Yeah, it's very simple to use.

Bill Gasiamis 49:13

Yeah. Okay. Well, that sounds like it's as accessible as the old-fashioned tennis Nintendo Wii that I played when I was in rehabilitation in 2014. And all I did was stand in front of the TV screen that they had wheeled in front of me.

A quick walkthrough of MindMotion GO

Bill Gasiamis 49:29

And because I had balanced I was able to regain my balance. Then I basically just strapped the controller to my left hand and swung the virtual racquet and lost every tennis game that I played.

Angela Greene 49:44

Well, you don't even need to hold on to a controller. That's the cool thing. I can show you examples of some of the games if you have a few minutes. So this is my screen. And this is a companion which is the dashboard that allows me to record These are all fake patients.

Angela Greene 50:02

So this allows me to add patients here. Okay? And username, I can put whatever is in there. But then over here, it says the person is going to do it unsupervised they need an email and password to be able to log in at home, okay?

Angela Greene 50:19

And then when I come down here, what's their therapeutic goal, I want to be able to drink a glass of water, I want to be able to walk. And then once I complete that, I hit add.

Angela Greene 50:27

Now this comes up, we have a companion app, it is a daily reminder phone app that is kind of behavioral, cognitive behavioral, that reminds people why are they doing what they're doing, and when they have scheduled appointments, and things like that, okay.

Angela Greene 50:42

So I'm not going to do that right. Now. Let me just go to a fake patient here. So as a clinician, this is where I set your schedule. So you could see on Tuesday, you have an upper limb program, and an upper one is easy, maybe on Friday, you have some free play that you could do.

Angela Greene 51:00

And these are examples of the programming here, I could set the levels from one to 10, I could auto level it, or so it auto levels up. If you're successful after a

couple of games, you don't have to wait for me to change it as your therapist, or it could drop you if you're not successful. Okay.

Angela Greene 51:17

And this is an example of an airplane, an airplane, you're using your trunk seated or standing to steer the plane. And this is actually a higher level. So the lower level is visually not as complex and it moves a lot slower. And it gives a lot more cueing.

Angela Greene 51:37

As you progress through the games, it gives you consequences and obstacles and challenges and moves faster and things like that. So that's one example of the games. So this could be used as the edge of the bed. And it tracks compensation.

Angela Greene 51:51

So if you try using your legs to get over there or something like that, it'll track that some of the others I have this are using your arm to move across the lanes of traffic. Steering wheel, so this is like your driving like a driving game, which is really helpful because I used to do driver readiness training for people with brain injury and stroke recovery.

Angela Greene 52:15

Right, kinda scary process. Sometimes, this uses your whole trunk, to turn the car. Okay. I really like this one, I'm gonna expand this one. So this is the trunk and bilateral hands. And you could actually crossover do hand over hand and all that. And it starts off very simple.

Angela Greene 52:38

This is actually a higher level, like Don't Touch the Blackwidow. Right? It could be seated or standing. And you notice some of the rocks are grayed out. Because this is a higher level, basically, you have your choice on which path of the rocks you're going to follow the blue or the green. And they started off on green, so you can only touch green now.

Angela Greene 52:56

Okay, so there's some problem-solving, there's cognitive demands, and I really like the elements of dual-task training. So if somebody's standing, I might put them on a foam pad while they're doing this and compromise their balance, just to really make them super strong, you know?

Angela Greene 53:13

Yeah. This is an example across the road with wrist flexion extension and a minute's time, you'll do like 60 reps. The goal is not to get run over.

Bill Gasiamis 53:30

Okay, so using that wrist movement to

Angela Greene 53:35

Advanced the bunny. Yeah.

Bill Gasiamis 53:37

Right, I see.

Angela Greene 53:38

Now this is a forward-backward step. But the next one I like even better. It's called Free Steps. And the free step is you're moving in multiple directions. So you could use either leg to go forward, take a step forward, but then you notice the step into the side and the other side and then go forward.

Angela Greene 53:57

And you can also step backward to get off the train tracks or whatever, so you don't get run over. So the first level starts with like one single little country lane and then it gets crazy like somewhere in some busy city, right? Okay. This is a flying car. Look sorry.

Angela Greene 54:18

So again a higher level, right? If you're avoiding the obstacles of the cones, the cones will move at a higher level. Now we also have game eyes are significant to get to that. Let me see what else I have here. You could also do it with your wrist. This is what the eyes are.

Angela Greene 54:41

So you squeeze it to control the pressure and the release that it's calibrated. Let's say you don't have a lot of grips, or you had a spinal cord injury or something. You just don't have a lot of grip or release. You could customize it to that person what they have available.

Angela Greene 54:57

Okay, so you can still play the game. You So it's totally customizable. And I did

this with a gal who had a catastrophic brain injury, very severely attack sick.

Angela Greene 55:09

So her presentation looks something like this the whole time, and unable to focus and sustained visual attention, which if you can't sustain visual attention, you're gonna have a hard time recovering anything. When by I introduced her, I had the therapist stand next to the screen.

Angela Greene 55:24

And she played this game for three minutes and blew her therapist away because they didn't think she could do it. So it really opened their eyes to how she was processing information and all.

Bill Gasiamis 55:33

Yeah, that's fascinating, Angela. So inch.

Angela Greene 55:38

And then this is another good one. So this is a tilt table. This is a higher level, of course, the very first level is just a frame fence with the ball rolling around trying to get the gold nuggets, this one has things that try to take you out and drown you, as you know, complex.

Angela Greene 55:55

So it's side bending, as well as extension flexion. So really increasing your body awareness. And as somebody who's certified in vestibular rehab, then I upped the price of poker by challenging your balance. I've had patients on parallel bars on a rocker board with us in front of them playing it, which is the very high level you like your super surfer dude.

Bill Gasiamis 56:19

Yeah. I love her. Even though this seems like palm cycling, it's the higher-level more advanced version. I love how it's very gentle. And that you're looking at the animation and how much the person has to move.

Bill Gasiamis 56:35

They're not really moving dramatically, and you know, frantically or anything like that. It's a very low, gentle, kind of.

Angela Greene 56:44

And I think that's a different side to the way you write we just think your normal moving normally. Now this is a higher level, this is one of my favorite games, especially bilateral play. So the hand has to hover over the target. So you see like the star, the right hand.

Angela Greene 57:02

And then if it has spikes, you don't touch it. And now it's going to be the triangle and that little one down there.

Angela Greene 57:10

But when I calibrate this, if somebody doesn't have a great range of motion, let's say on the right side, and they can only play up to where like the star is, or the diamond is they could still have a full range of motion with one hand and play the game within their available range.

Angela Greene 57:25

This is what I talked about calibration. Yes. Because I don't want them to try to come up here 6070 times a minute for you know, five minutes if they're going to start doing all kinds of body English and compensate, and I want to get rid of the impairment.

Angela Greene 57:38

So I might keep them down at a lower level just to keep them a better movement quality, and then slowly increase that movement quality.

Where would people go to find more information about MindMotion GO and MindMaze?

Bill Gasiamis 57:46

Yeah, that looks amazing. Excellent. I think that's fantastic. I think it's a really great thing that these things exist. I'm glad that somebody from my maze reached out so that we can get on the podcast.

Bill Gasiamis 57:58

So if you can give me a little bit of information now so that we can send people to the appropriate website, Where would people go to find out a little bit more

information? And who would they contact if there was an inquiry that they wanted to make? Well,

Angela Greene 58:14

you can contact me in the United States, we are international, on several continents. The lead for the United States so you can reach out to me my email address is Angela a n g e l a dot green light, the color gr e e n e at mindmaze.com. The website is mindmaze.com. And if you reach out there, what happens is they'll find the person who handles that country to come back to you.

Bill Gasiamis 58:45

How many countries are around the world?

Angela Greene 58:47

Oh, We'll I know we're in most of Europe. I know we're in India, we're in Saudi Arabia. I'm trying to think I think there was some presence in South America, I think in Australia as well.

Bill Gasiamis 59:03

Okay, well, that's great. Sounds like there's a lot of possibility for people listening from all over the world to access the solution. This podcast goes to about 40 or 50 countries. So I'd say we probably going to meet people from all over the world there that might be able to get curious about that.

Bill Gasiamis 59:26

And as far as all the rest of the contact data are we'll have that information in the show notes so people can find it and connect these yet.

Bill Gasiamis 59:35

They can also reach out to me via recoveryafterstroke/contact if, for example, they have a question or they want an introduction or anything like that. But in the meantime, thank you so much for joining me on the podcast. I really appreciate it.

Angela Greene 59:50

Absolutely. My pleasure. I love talking about what I do. I have a real passion for what I do, and an advocate for my clients and if we can change and shape the outcomes, I think and have that opportunity to do it. I think we should do it so it's a great opportunity.

Intro 1:00:07

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Intro 1:00:24

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Intro 1:00:40

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Intro 1:01:15

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