

Rewellio Virtual Reality Stroke Therapy - Georg Teufl & Andy Gstoll

Rewellio Virtual Reality Arm Therapy App.

Georg Teufl is an occupational therapist and the founder Rewellio the virtual reality software that assists patients to get more therapy time during recovery from stroke or brain injury.

Rewellio is a smartphone and tablet app that uses virtual reality to improve the hand function after a stroke or brain injury. Rewellio enhances traditional therapy approaches like mirror therapy and motor imagery. The hand therapy app is supported by software, that reports back on the patients progress as well as, biofeedback to awaken sensory pathways and visual stimulation to cement new functions.



To learn more about Rewellio, follow the links below

Website:

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Discover how to support your recovery after stroke go to RecoveryAfterStroke.com





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So when I was in therapy, I was using the Nintendo Wii, to play virtual tennis. And that was great I enjoyed it. And it got me physical and it got me extremely fatigued. But there was nothing to do with that data. There was no way to do anything with it other than it was a good fun way to do rehabilitation, and to try and play tennis with my left hand where I'm usually a right hander.

So that was interesting. I like how you're bringing the therapist into this, but then you're also able to access the data and look into that data, see what patterns are emerging and then use that to benefit people going forward. So that sounds like a really well rounded, real deep offering.

Intro 0:50

This is recovery after stroke with Bill Gasiamis, helping you go from where you are to where you'd rather be

Bill 0:59

Bill Gasiamis from recoveryafterstroke.com here. This is Episode 68. And my guests today, are the founder and software developer of Rewellio.

Rewellio is an organization founded by George Teufl, an occupational therapist who was frustrated about the amount of rehabilitation time offered to his patients.

So he set about creating an app that was going to assist them have more rehabilitation time, either while in rehabilitation, or at home, while taking advantage of the world of virtual reality using the Rewellio app.

Also, just before we get stuck into it, I wanted to let you know about something that I've been working on that I finally completed.

Bill 1:51

It's a free webinar that people can download directly from recoveryafterstroke.com/webinar.

Bill 1:59

Go to recoveryafterstroke.com/webinar to download a free webinar that I created for people on the recovery journey. Everything I do at recoveryafterstroke.com is about creating a

Bill 2:16

place where information can come to share it out to people who have either experienced a stroke or caring for somebody that's experienced a stroke, so that they can go about making their recovery journey, a much easier one than when I was making my own recovery journey, which started seven years ago, there was a lot less information out there about how to get back on your feet after stroke. So it was my job I felt to create a place where people could do that, and have a better version of recovery than I had. And hopefully I can support people do that with this webinar. In the free webinar, you'll learn how to take action on your recovery now how to build a vision

Bill 3:00

of the future that will inspire you, and what to do when you are faced with hard decisions about your path forward. You'll also learn the importance of creating a supportive team around you, and what kind of people that may involve, as well as how stroke recovery coaching can help speed up your healing. So go to [recovery after stroke.com slash webinar](https://www.afterstroke.com), download the free webinar. And don't just be a stroke survivor, become a stroke, thriver. Andy Gstoll and Georg Teufl from Rewellio, welcome to the podcast.

Andy 3:36

Thank you. It's a pleasure being here.

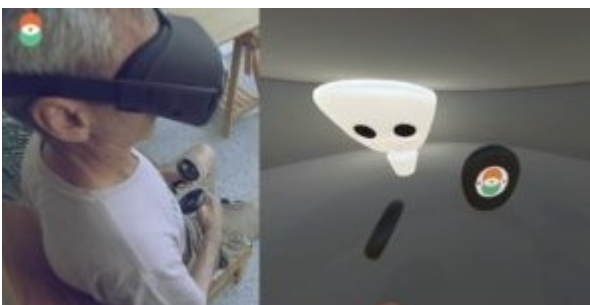
Bill 3:38

Thanks so much, guys. I'm really excited about this podcast. I'm always excited about my podcast, but I really love it when I come across something that I think is a little bit unique, and helps my community overcome challenges after stroke. Andy could you tell me a little bit about yourself, what you do and how you came to be involved in this organization.

Andy 4:01

Absolutely. So my name is Andy Gstoll I've been in the startup world for for over a decade now have been focusing a lot on mixed reality. So technologies like augmented reality and virtual reality are really my expertise. And I act as an advisor for Rewellio. And I've been involved with the company for about a year and a half or so now.

Trying to reinvent the rehabilitation space



Andy 4:26

I met George, quite coincidentally at an event where we started talking, and where he shared with me his vision and his idea about, what he wanted to do for the stroke rehabilitation space. And I was very, intrigued and got really interested

in this project.

So we spent a lot of time initially together talking about his ideas, and what he wanted to do in terms of construction of this space. And so we found a way to work together and now we're a great team. And we're, on this mission of trying to reinvent the rehabilitation space.

Bill 5:09

I'm loving the sound of it. Tell me George, a little bit about yourself, how did you become involved in this space.

George 5:18

I founded the company, so and the driving force behind and the reason is so I'm a physiotherapist work in the field of stroke rehabilitation and have a big focus on motor learning. And I'm also having a background as a software developer. And what I experienced during my work a stroke patient as in a rehab center, you have a lot of time you can do a lot of therapy. But after the patient return, I went there it turned and didn't really improve their other function because they have too less therapy time. So that's the reason.

George 5:56

Why is that thinking what can we do how we can enable stroke, patient more therapy time, and with my background as software developer, especially looked in consumer electronics, because they are affordable, so everyone can get access to this therapy approaches.

Bill 6:14

So you're a software developer and a physiotherapist.

I decided I want to work with people



George 6:18

First, I became a software developer, but then I decided I want to work with people and not only sitting in the office and just doing programming. So I became a physiotherapist. And I think that's the main advantage to the no profiles. So the physical therapy world, is a completely different than the software world. People speaking different languages, thinking different ways. And I think that's a huge problem for many project to get both in the same direction.

Bill 6:58

Wow, that is a really unique thing. Because one of the challenges that stroke survivors have is especially when you go to a hospital and deal with doctors, is thankfully the doctors have never had a stroke. And trying to understand what goes on in our bodies and minds. And each person is unique and individual is such a really difficult thing I imagined for them to do, including therapists, occupational therapists, physios, whatever. And it's the communication pathways are really difficult to sort of bridge.

Bill 7:36

Now if you or someone you know, has experienced a stroke, and are 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 like 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 these things to you. But obviously, because you've never had a stroke before, you might not know what question to ask. If this is you, you may be missing out on doing the things that could help speed up your recovery.

Bill 7:36

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, 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 recoveryafterstroke.com and download the guide it's free.

Bill 8:49

They happen to be working in the field of the brain when they experience the stroke. And it just changes the game about how they can communicate, learn about what's important to stroke survivors and then give us applications for what they've learned in their studies. And now how they use that in their stroke rehabilitation. So that's another beautiful unique, bringing together of two completely different worlds physiotherapy and software development.

Bill 9:19

And that inspired you to do this amazing project Rewellio but at the same time, how did you get inspired to do that? Because a lot of people go and work in video therapy and they just do what they can do they work with what they can work with? And how did you decide that you were going to get involved to bring another aspect of support to your patients, what was their frustrations, what was happening?

George 9:51

The basic motivation was kind of a frustration. Because work in a rehab center, you do all this therapy, you see the patient improving.

But in the long term, you see they don't use their full potential for rehabilitation. So and I was wanting to push the patient as far as possible.

And therefore realize that the high quality time for physiotherapist of occupational therapist speech therapist of all the kind of therapists is so much limited because of the cost factor.

George 10:25

So that alone isn't the solution for helping the patient getting the most out of rehabilitation. So it requires some additional therapy. And when you look out in the market, there are some solution.

But most of them are very expensive. So the patient don't use them or can't afford them at home.

If you look at all the robotics out there for stroke, rehabilitation, they are too expensive. So that's not a fit for a patient to get the most of rehabilitation, you need affordable rehabilitation approaches for home use. Because there you have the biggest gap of therapy time.

Bill 11:03

Andy, I can see that you probably bumped into this guy somewhere, he started telling you these things, and how could you not get excited about what he was saying?

And how could you not want to work? in this space, where you must find a way to collaborate. So happened with you? How did you decide that you needed to? Or you wanted to work in this space with George?

Andy 11:27

Yeah, it was, like I said earlier, it was, it developed a little bit out of the blue, because we just met at this event, and purely through accident, really just through a common friend.

And, and like I said, I was very much involved in the startup space for the past, over 10 years or so, developing, augmented reality software, through a company before this, and very much focused on, use cases where this technology can be used in the advertising space.

In other enterprise environments, in the gaming industry, in all sorts of different environments, but really not in the medical space on the healthcare space at all.

Something that can really change lives



Andy 12:22

So, when I listened to George and his cause and his mission, it was a completely new, subject matter for me something that I hadn't been involved with before, but I saw that, that the cause is an extremely good cause.

And it's really something that the world needs, it's not something that is there for entertainment, or for fun, or for a moment of joy.

But it's something that can really change lives, and really can change, how people live their daily lives, and that's what what interests me,

Andy 13:06

At this point in my life, and it's, it's something that.

Andy 13:09

That I found extremely attractive, George's unique skill set, as he explained earlier, with a combination of understanding the physical therapy space, and also the software development, and just having an overall good sense for technology, and, being inventive and, coming up with new concepts, I really thought this is a great opportunity for me to get involved. And, that's why I couldn't say enough, really.

Bill 13:43

Excellent. So we're talking about Rewellio and Rewellio is a virtual reality device, isn't it that stroke survivors wear. Tell me a little bit about what actually it is, because we haven't spoken about it yet. And we've been going for 10 minutes or so.

George 14:04

The basic idea or another way, the one of the biggest challenges of stroke

limitation is getting back a functional use of the hand.

So because if the patient can move a little bit, or even if it can't move anything, it's there are very few therapy efforts out there that work really well.

You have mirror therapy, you have observation of movement, motor imagery, but also approach are very limited because the patient has no feedback.

And as soon as a patient can grab and release things, you have very effective therapy approaches like same therapy, force use therapy, to push these motor activities.

George 14:47

But to get there, it's real difficult. And most of the patient don't get there because of the they don't know what to do, or there is nothing to do what truly works. So the basic idea for Rewellio was that patient without a functional use of the hand, can experience the hand in the full range of motion in VR.

So the basic idea is to move mirror therapy in VR. So you have a headset on, you have a healthy hand in VR, and you have a second hand controlled with EMG (inaudible). And that was the basic idea.

Bill 15:23

When I was going through therapy, hand therapy, after surgery, I woke up, couldn't feel my left side. So I need to rehabilitation to walk and to feel my left side. I was in hospital waiting to get to therapy and being evaluated. And I didn't have mirror therapy, I didn't have any therapy. yet.

It was two or three days before I actually went into rehab for the first time, I was imagining myself using my arm and using my leg. So tell me does, how does virtual reality work?

Does it tap into that imagery, that imagination side of the brain where it fires off the same neuronal structures as if I was actually doing that? Or does it take over another path? Does it take another path to that result?

George 16:14

It does not (inaudible) if you think of motor imagery, you think of the movement, but you have no feedback of if you're thinking the right way. Or if you're really concentrating on this in the right way. You don't know it's perfect approach. But

there are some limitations. And what we see that most of the patient have at least a very little EMG activation, even if it's not visible.

Bill 16:45

What was that a little bit of what?

EMG activation

George 16:48

EMG (Electromyography) activation, there was some muscle activation, even if you don't see them. And so we are amplifying the signal, so the patient gets the feet they are sending down a signal, trying to activate the flex or the extender and seeing really changing the signal on the display. So now you have the motor feedback loop sending a signal down and getting some activation.

Andy 17:19

Just for clarification. So there's really two things here one is virtual reality, and the other one is EMG. biofeedback, which Rewellio is also using in a very unique way.

So sticking to virtual reality only for a moment, that, the power here of virtual reality is of course to, mimic some aspects of mirror therapy as one aspect of it, which means that instead of, staring at a physical mirror that is set out in front of you on the table, and moving your healthy hand and kind of looking at, the mirror image of your healthy hand, stimulating your brain accordingly to get that, movement back into the affected hand is, obviously an activity that gets boring very quickly.

Andy 18:11

And with virtual reality, this is something that we can do in a more actually in a more fun way in a more entertaining way.

Because we can have, we can create games with different things that you can, accomplish as you move your healthy hand and you can achieve scores, you can, go through different levels, you keep, instant gratification, you can, have a little bit of fun actually, and that's one approach.

So with EMG, biofeedback, which George described as a second bit here is we use, some EMG, biofeedback arm bands that aren't there.

Andy 19:01

Different sensors that can be used, one of them is the mile, which, actually has been used before also in some aspects in some research labs for stroke, rehabilitation, and that's the aspect where we can detect some, some signals coming from the brain that will reach the under arm, even though the underarm is not, or the hands are not moving at all, we can still detect some super minor signals that reach, the muscles that are moving the hand. And then we can take those signals, and we can amplify these and then visualize it through virtual reality also.

Andy 19:48

So that means that when you think of moving your hand, even though you don't see any actual movement in your, in your hand, we can visualize that movement and virtual reality. So your eyes perceive a moving hand, again then stimulating your brain with instant gratification. Okay, so this thought was correct. And I see the moving hand, which then, has a positive effect on the learning effect, and can actually then trigger some movement again into the affected hand. So those are two aspects really working together.

Bill 20:25

Wow. So the biofeedback is the part that I was missing. When I was imagining my hand moving. I was moving it, guys, but it wasn't telling me anything. In response. It wasn't saying, yep, in fact, you did move it. That's the result of your movement.

George 20:43

That's exactly what we're doing. And we do a little bit more, we would track the flexor and extend some muscles, but you often see with stroke patient is that they can flex a little bit, but they can't extend again.

So we and there are some some electric simulation systems out there to try to activate extensor. And what we are doing, we are trying to retrain the activation pattern of the hand.

So we can learn, with the feedback of the muscle activation to elect the flexor and to activity extensor to at the same time. Normally, the flexor working very, well, it's a very dominant tech now.

Learned non-use

George 21:25

But it's too dominant, that extensor signal isn't going through, you have no feedback. And you don't learn how to activate this and with Rewellio you can learn to activate both the flexor and extensive muscle in the right way to learn to reopen the hand again and with EMG biofeedback, but the feedback you're seeing, you can trigger something with your own activation pattern.

We prevent learned non-use. And that's one of the biggest issue in stroke rehabilitation, especially for the hand rehabilitation. People need to repeat this activation again and again, to improve this motor functions, and adding a little bit of gamification. They're doing more repetitions, they're better prepared for a session with a therapist so they can make more progress.

Bill 22:21

That's interesting, that word that you said learned non use. So people hear about neuro plasticity, and they think, well, it's an amazing thing. We can create new pathways, and we can use neural plasticity to benefit us. But what people don't realize is that the negative side of neuroplasticity is that you can untrain the brain.

And because the brain is plastic, if there's something that you're not using it, you can lose it. And that can go forever if you don't practice that area. So I love the fact that there's an intervention there for learned non use, so has the method or the program or the process, whatever you call it has it been tested on patients at the moment?

George 23:05

We are auto some pilot customers, we have centers in Austria, Germany, UK, and the United States. And the basic approaches we are using our evidence base EMG biofeedback is used a lot in rehabilitation in other spaces, but also stroke rehabilitation. So there is some evidence out there that we are based on.

And what we are also doing at Rewellio is that we are collecting all this research data and put them in a product. Because it's another huge problem that you have a lot of prototypes and research projects out there that show Oh, that's amazing that something you can do. But most of that don't reach any patient. The interest

for for clinical data for research, but not for their daily life, of a stroke patient.

Bill 23:57

So the patients or the trial patients that you're using it with are they people that have left rehabilitation space and an are at home, and they're using it at home,

Bill 24:07

by themselves as its intended.

George 24:09

Both, the user journey or the patient journey, if you want to call it this way, as if you have suffered a stroke and you've come to rehab, you should get to know the system.

So and if you like it, if you can see that, that something you can benefit from, you should be able to do it at home. That's the way and you also can connect with your therapist and your therapist can watch what you're doing how your'e improving. But the main focus is to use Rewellio at home.

Bill 24:42

And has there been any feedback yet from the patients that are trialing the product to give you some kind of an idea of how they're traveling or what they've noticed different.

George 24:54

But most of the patients say that they are surprised how sensitive they can activate their other hand to get a different reaction. Because normally they do flex, that's a very common activation pattern for them.

But the feedback most of times really, they're surprised how sensitive they have to activate in a different way to get a different result. So making them more sensitive is one of the most benefits, we've seen some patient without any visible movements, they can now define from this motor feedback loop.

George 25:33

Now they can move a little bit. But it's always a long process like stroke rehabilitation overseas. And with chronic stroke patients, we see the patient learn to reduce their muscle tension. So if they have very stiff hand, using Rewellio to learn to relax the flexor to learn to, relax them. And so the hand gets softer now,

which is also a huge step for them.

Bill 26:02

So you're saying that the hand, which seems for a lot of people not to move, just go stuck, closes gets clenched, you're saying that there's some patients that are now starting to notice that they can make that less clenched and feel a little bit more open.

George 26:21

Yes, if they can open the hand in the passive way, if it's the hand is closed, and the structures are so tight, that it's not possible to open the knot. But with some patient, you can passively open the hand. And with Rewellio you learn to relax the muscles, so the hand gets softer. So and they're coming quicker to the state where the hand is softer now.

Bill 26:52

So we've spoken a lot about the hand so far, in what other areas can this technology assist people recovering from stroke?

George 27:03

We the main focus is to look at technology and see how we can use this technology in a therapeutic meaningful way. So with the EMG biofeedback, we are focusing on the hand, with VR we are mostly focusing on the arm.

So with the controller, you can track you can track the range of motion, you can adapt the exercise to the patient, to motivate him, and we're also looking into visual field impairments. neglect, because in VR, you can track all the events and to which you and the patient is responding or not.

George 27:37

You can adjust the situation especially for the patient. And with a research cooperation, wanting to look into the cognitive side. And the big picture of Rewellio is to get a better overview of the patient. Because normally you have the assessments and rehab center.

And then the therapist say okay, maybe there's a problem with the vision, maybe there's a problem with the cognition, you have some assessment at specific time points. And what we're doing is we're collecting data in real time, and see how we can look into this data to track every day and see how we can personalize the

therapy.

Bill 28:22

Is there some way that I can, if I was using your program, or your device is there some way that I can track back and have a look and see how far I've come? Because one of the things that I think is important for stroke survivors is that they have the ability.

And I often tell people is get your loved ones to get video of you taking your first steps, taking your, steps in the month, can we track how we're coming along? And how far we've come? Can we show that to patients.

Motion map



George 28:55

That's a core element of what we're doing. Right now we're building up our dashboard. Where, we track all the data about your exercise time, and we call it motion map. So in VR, we're generating a map of your range of motion, where you can see how in how you increase this range of motion over time.

Bill 29:14

There's a video diary, I believe, is also a key component that we offer within the app. So it's exactly what you just said, we give the patient the ability to record at a certain time and then watch it later. So they get a pretty good idea of the progress.

George 29:32

That's a side project we're doing, because it's what many therapists do recording a video on the smartphone of the patient. And we set up a video diary, where you can compare specific tasks where you take a video or in the timeline, for example

with walking. You can record today and compare it with a video recorded six months ago or a year ago. And see really side by side the difference. Because for a patient it takes a lot of time.

George 30:04

And most of the patient improve small step by steps. And seeing the small improvements is very important for the motivation. And that's the part where we want to support a patient, show them how has improved with therapy time, how has improved the range of motion with the speed of motion. To trim all this parameters to say, hey, you're doing progress, it's going in the right way. Keep going.

Andy 30:34

So Bill, just just to clarify,

Rewellio is a software company

Andy 30:38

Rewellio is a software company. So the devices that we use are devices that are out there in the market that anyone can pick up from, a Best Buy in the United States. In electronics store that you can order on Amazon. So we, we look for these devices that are affordable, mobile, and that are within reach and, access for anyone out there.

Andy 31:07

So that's why we build on iPads on Android tablets, which most of us have at home anyway. And then we obviously look into mobile virtual reality headsets, that, that are now literally this year only beginning to become affordable and really practical, in many ways.

Andy 31:30

And then, on our website, of course, we direct patients or therapists, to these various hardware products, where they can buy them where they can order them on Amazon and whatnot, but we're a software company, and one element of developing software, are really the Rewellio app, I mean, that's what it is, that's what you download onto your iPad on your tablet, to begin with.

Andy 31:58

That's where we offer all these different exercises for the different modules

George mentioned, the hand, the arm, speech, vision, cognition, all these different areas that we address with the different exercises, and for these different exercises, then you will always need the iPad, or you will always need the the Android tablet, that's always the basis to begin with.

Andy 32:25

Then we have these accessories, which you may or may not use for, certain extended exercises, and that's whether the VR headset comes in, or that's where the EMG, biofeedback armband comes in, or perhaps other devices, accessory devices that we may use in the future.

Andy 32:44

But we're a software company and we collect, through these powerful sensors that we have, within these devices, we can collect a lot of data, as George mentioned, obviously, under very strict, privacy policies, and making sure that that's very well protected, we collect all this data, and that's how we understand the condition of the patient.

Andy 33:14

We understand, for example, as George mentioned, the range of motion, we understand perhaps, on the cognitive side of things, what's what tasks he or she can accomplish or fulfill, and what perhaps is potentially limited in terms of the vision when using the VR headset, and looking at certain objects in the virtual world that she will he can or cannot see.

Andy 33:39

Collecting all of this data, we're trying to, establish a picture of the of the patient and understanding the condition, and then, based on this, we call it the patient engine based on this, we, we then recommend the appropriate, exercises that are right for that particular patient.

Andy 34:02

Because every patient as very well is different, some have, problems in one area, and then, some other patients have, problems in multiple areas, and, we try to understand this profile, and then, offer the exercises that fit for this particular person, and then also for that particular person, in the right moment, what time rather of within the process of the therapy, as the person progresses, so that's the idea. That's the overall picture of what we're trying to do really.

Bill 34:04

Do you expect it to be that tailored, even though if it goes worldwide and viral, there's gonna be a lot of people coming on board that can't all access yourselves or somebody, how does somebody on the other side of the planet, get a specific tailored program to the exercises that they require.

George 35:15

We always recommend to use Rewellio in addition to a one to one setting with a therapist. So, we don't want to replace and it's not possible to replace the therapy with the one to one settings. That's the high quality time.

And with this, we will generate additional therapy time for the patient to increase the therapy time. And that's the key for the outcome of rehabilitation. So it always needs both sides. And both sides can do different things in the best way.

George 35:49

If you look on the on the technical side, with consumer electronics with the gamification, what we are doing, the great way to doing more repetition, to get a better preparation. So the representation of the handle of the example is better prepared for a session with the therapist and the one to one settings.

George 36:11

The therapist in the one to one setting can start with a better, better situation of the patient to get a better improvement, and can set up all this preparation in a functional way in the in the whole picture. If you think of arm rehabilitation, you need to do your movements.

But you also have the right alignment of the shoulder after your trunk there are so many things you have to work on with the therapist and bring both together.

George 36:46

It's the best outcome for the patient. That's what we're looking for.

Bill 36:50

Yeah, I like the sound of that. So when I was in therapy, I was using the Nintendo Wii, to play virtual tennis. And that was great. I enjoyed it. And it got me physical and it got me extremely fatigued.

But there was nothing to do with that data, there was no way to do anything with

it other than it was a good way, a good fun way to do rehabilitation, and to try and play tennis with my left hand where I'm usually a right hander. So that was interesting. I like how you're bringing the therapist into this.

Bill 37:25

But then you're also able to access the data and look into that data, say what patterns are emerging, and then use that to benefit people going forward.

So that sounds like a really well rounded, real deep offering of support, and then ongoing support and service to other people who are coming, unfortunately down the line and needing stroke rehabilitation.

So how have you found the therapists and their acceptance of this new way of doing work rehabilitation has there been some concerns about what you're proposing?

George 38:08

It needs a lot of explanation what we're doing, to show them how to pitch to can benefit.

And as I said before thinking of stroke rehabilitation, long term rehabilitation.

So most of the therapists in the neurological field are looking for additional therapies for the patient, because they know to get the most out of the rehabilitation they need more therapy time.

George 38:33

And as a therapist, you can't deliver that much therapy that they needed. So most of them are very open minded, especially the younger ones, very interested in technology, and how to bring some new approaches into the daily therapy business.

Bill 38:50

That's great. The new ones, those new young ones are always the ones that we want to look to, to take on new technology and to be the early adopters. Because they are very keen, they're very excited.

And they still full of hope that they are going to save the planet and the people and everything. So we really want to get them at that right time when they're really excited.

George 39:18

And for the most therapists, the best thing they can see is seeing their patient improving

Bill 39:24

It would be very rewarding.

George 39:27

That's why we're doing the job.

Bill 39:29

Yeah. Are there any limitations to the software at the moment, things that you're working on that you hope to have that are not available at the moment?

It's a learning process

George 39:39

We are very early stage, we have EMG biofeedback system out there. We have our VR systems working on the Oculus quest to release it, and also on the HTC Vive focus. So that should be available very soon.

George 39:67

And we have some Research Corporation for a personalization of the therapy to have with the universities and look into the data we're generating and see how we can learn or how we can answer some questions of the researchers, and how we can use that information to adapt the therapy situation to patients or to get them better therapy for the patient.

It's a learning process for the next years. We are always learning.

Bill 40:26

Sounds like an amazing thesis.

George 40:30

It's very amazing. Yeah.

Bill 40:33

How do you plan on rolling it out? If you're five years down the track, you've gathered some data, you've had some trials running, you've had some therapists online?

What's the process look like? When you start to begin to roll it out? How do you recruit more occupational therapists in more countries seems like a little bit of a logistical challenge.

George 40:56

We're focusing on the online side. So we try to reach as many therapists and patients over social media website share information, what we're doing, how we're doing, who can benefit, what limitation of Rewellio so that it's clear what we're doing and what we can't do.

George 41:18

The basic idea is that is simply working out of the box. So if you have your Oculus quest, HTC tablet, you download the app, there are tutorial videos guiding you through the exercises, what you can do what's the focus of this exercise?

George 41:35

And it should work very simple. To experience stroke therapy or this also approaches have to work for the users in a very, very simple way. Otherwise, it's for research and not for a daily life.

Bill 41:50

Yeah, I like the focus on it has to be for daily life. And then the research also is an important part of it. But definitely, as somebody who was looking for any solution possible at the beginning to make sure I got back on my feet.

And I know there's people that are still doing that 2 3 4 5 10 years after stroke, anything that they can do that's focused around the patient is very much appreciated and needed and wanted. What does it cost to download the app?

George 42:21

Right now it's free, it's a trial version, and will switch later this year to a paid version, it will be a monthly fee about it's about 30 euros in Europe. So it's I don't know what it is in US dollars in Australian dollars in Australian dollars,

Bill 42:40

1 million. At the moment, the Australian dollar is not worth much compared to the euro. But never mind, we'll work it out.

George 42:51

But the business model is based on a monthly fee for the software and the hardware you buy on your own.

But as Andy mentioned before, its consumer electronics. So our devices can also be used by other part of the family.

George 43:07

So the software is in the price range will be.

Bill 43:11

And it's an ongoing fee. But it's not something that people need to commit to forever.

They commit to it for as long as they want when they find the get the results that they need, then they're done with that.

Andy 43:24

Yes, exactly.

George 43:25

Yeah. They can cancel, anytime, it's a monthly fee. And for stroke patient if you reach some level there is a point where you need a break.

So and that's where you can cancel it and after some month and you decide, ok now I'm full of energy, again, I want to reach new goals, you can reactivate your account and start the therapy again,

Andy 43:52

Just a side note for me here, working in the startup space for a long time, obviously, one of the objectives that you have, as you create a business is of course that.

You want your customers to basically be with you and subscribe to whatever service you're providing for as long as possible, because that's how you make money.

Andy 44:15

And that's how you, build a business.

But in this case, of course is well, of course, we need to sustain our business and

we want, obviously patients to use Rewellio as long as they want and as long as they can.

It makes us happy too

Andy 44:31

On the other hand, of course, once they stop using Rewellio, it makes us happy too, because we know that we solved their potentially improve their lives and, maybe even solved some of the problems that they had.

So it's bit of a two edged sword there.

Bill 44:48

You guys, you're not going to be short of patients, unfortunately.

Because the stroke statistics are one in six people will have a stroke in their lifetime, and 60% of those will get back to work 40% of sitting at home, trying to get back to some kind of normal life. And that's a very large number of people.

Bill 45:08

Unfortunately, most of the strokes are caused due to lifestyle factors. According to the World stroke organization, 80% of strokes are preventable, that's crazy.

So we're, we've really done a good job of getting ourselves unwell now to rely on people like you to come up with solutions to make us better.

Bill 45:28

If you think 30 euro, or 50, Australian dollars, or 40, American dollars, is a lot of money per month, to keep you well or to get you better.

I mean, that's got nothing on how much it's cost me to be sick from stroke. In the last seven years, it's cost me, more than half a million Australian dollars, easy, that's just been conservative.

Bill 45:51

And that is not in money that I've had to spend that is in money that I haven't made, I haven't been able to earn that I haven't been able to, go about my business every single day like I used to.

So absolutely, I encourage people to make money from stroke survivors in a

beautiful way, in a way that's supportive and offers great value.

Bill 46:15

There's nothing wrong with making money in that space. And there's nothing wrong with expecting people to pay \$30 a month, or 50 euros a month, to allow you to continue to make the software better and better and better and better.

Because that's in the end, what we want is the most amazing version of this. And hopefully, version one is offering amazing value for version 10 is 10 times or 100 times better than version one.

Bill 46:42

And that's really what our community has not had the opportunity to do. I went to rehab in a month I was discharged from rehab, then I went home.

And I was doing outpatient rehabilitation three days a week. And I had to travel to that.

Bill 47:02

By the time I got there about time I did my one hour rehab. And by the time I got home, there was four hours of my day gone three days a week.

So even if I wanted to get back to work, there was three days a week that I definitely couldn't, because I was committed to my rehabilitation, I needed to get better.

Bill 47:18

So anything that can be done inside the home, is also going to benefit people because it's going to decrease their time.

Which it means it's going to decrease the cost of travel, which means it's going to decrease their fatigue, which means it's going to just make it a lot easier.

And that's part of what recovery after stroke is doing.

Bill 47:36

I want to put together coaching and training programs and courses on wellness for brain wellness that people don't have to go out to do because it was such a difficult thing for me to do.

George 47:50

But one very important message I want to add here is that the aim of Rewellio is to add more therapy time. So to get a faster, better rehabilitation.

That's very important for myself, as a therapist, we don't want to replace your free time visit with a therapist, we just want to add more therapy time.

So from the mindset that's very important that our mindset is to increase the therapy time.

Bill 48:18

Yeah, I love that. That's exactly what I'm saying. So if I could increase my therapy time, after my sessions, because in Australia, it was all paid for by the government, we have an amazing medical system.

So when I get home, after my three months of outpatient rehab, I don't have any more therapy time, unless I have money to pay for it upfront. And it costs way more than \$30 a month for me to see each one of those people for an hour.

Bill 48:44

So to be able to do that at home, increases my therapy time after therapy has ceased, or after I've no longer qualified for additional therapy. And I know in America, some people struggle even more to get therapy, and to get in front of people because the medical system is the Medicare system is very limited.

Andy 49:07

Maybe just to add one more point on to this, because you, mentioned that you were playing the Wii for some of your exercises that you did previously, of course, there's, some clinics out there, where you come in and they have, various devices set up where then the patient can sit down and interact maybe with a Wii like this or maybe with some other virtual reality systems that have been around in the past, that were connected to a stationary PC that you had to wire up with cables that are that were very expensive.

Andy 49:44

And I just want to point out the, this mobility aspect, that you also explained, with your commute, going back and forth, and taking a lot of time and being very time intensive.

Andy 49:58

The beauty here is that really this year 2019 earlier this year was really the time when the first virtual reality headsets came out that were completely untethered that were completely mobile with, controllers and systems attached to it, that really enable the kinds of exercises that we want to do.

So this is really a great moment in time. We're literally doing things now that were not possible only a year ago.

Andy 50:33

That's also why we're so excited about this, because it solves this big issue of, being dependent almost on your clinic on the fact that you have to drive there, perhaps you even need, a loved one to sit with you in the car and to take up their time as well.

And, to some extent, these mobile devices, whether that's an iPad, or whether that's a virtual reality headset, it really solve this problem, in many ways. And like George says, it's a great opportunity to add more therapy time.

Bill 51:12

It's beautiful, guys, I really appreciate the fact that there are so many people out there doing this kind of work for people like me.

I find it fascinating that you guys wake up in the morning, and you want to make a product to help people like me, and I don't even know you.

It's just absolutely fascinating.

And I love you for it. And I'm so pleased that you're doing it. And it's one of the things that I'm grateful for, I do gratitude journals from time to time.

Bill 51:37

I don't physically write anything down. But I have this little gratitude practice.

And one of the things I'm grateful for is all the neuro scientists, all the doctors who wake up and do thousands of hours of, a study to open people's heads and take things out and put things in and fix things.

I mean, it's just completely mind, mind blowing.

Bill 51:57

I just completely and totally love that you guys are doing this, I thank you so much. I really appreciate your time today.

Thank you for doing what you are doing. I truly feel like if I'm gonna, if somebody is going to have a stroke.

It's the best time in the world ever to have a stroke, If that's even something possible to say.

So where can people listening and watching? Find out more about your products? And what you do?

Our community



Andy 52:27

Sure, maybe I'll take that one. Yeah, you can, of course, go to our website, rewellio.com can easily be found.

But what we also love to encourage you to become part of our community, because we're, doing a lot of work on social media.

So obviously, you can find us on Facebook and Twitter, Instagram, on YouTube, we have a lot of things up there. Just Google Rewellio and you'll find us there.

We also have a newsletter, which we send out every month, to keep our followers updated on, some of the things that we do we actually attend a lot of events.

Andy 53:05

In fact, a big event here in Germany is coming up called REHACARE which is in Dusseldorf on September 18. So we'll be there will be exhibiting we have a booth

there and so forth.

So subscribe to our newsletter, follow us on social media is really the best way to get in touch and to follow what we're doing. And like George, as George said, we're still fairly early stage.

Andy 53:32

So there's a lot of things still up in the pipeline, still in development and still coming.

So we want to make sure that we have a way to connect with your listeners and your audience out there. Going forward. So make sure to subscribe to the channels.

Bill 53:49

I'll have all the links to all of the social media platforms and all of that in the notes. So we'll get that at the end of the episode. George, any last words?

George 54:02

We tried to build through value from therapists for therapists and patient, therefore, we also need the feedback of the community. And as Andy said, We also invite everyone, give us feedback.

Tell us what you would like to see in Rewellio, get involved, so we can make the best experience for the patient, the therapist for the rehabilitation.

Bill 54:27

Excellent. Guys, once again, thanks so much for being on the recovery after stroke podcast. Your product is and your work is perfect for my podcast.

And that's why I was so excited to connect with you both and to share your work just in case anyone's listening and they're wondering I've got nothing to do with the guys.

I don't have any interest in the organization. I'm just somebody who loves to share amazing work and this is exactly what I'm doing. So thanks again.

Andy 54:58

Thank you Bill

George 54:59

Thank you.

Intro 55:00

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