

Adaptive tools and technology for improved quality of life

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[00:00:04] **Dr. Carlos A. Pardo:** It is my pleasure to introduce Sandy. Sandy Hanebrink is a CEO of Touch The Future/ReBoot, Inc. and there are many things that Sandy is going to bring to us. And it's great to have Sandy here. Number one she's occupational therapist and number two she's going to bring a lot of very important clues about advocacy and many things that we need to understand for patients with myelitis and myelopathy. Thank you so much Sandy for participating in the meeting so.

[00:00:59] **Computer generated voice from the exoskeleton:** Connected. Bending. Press to stand. Press to stand. Standing up. Left. Right. Left. Right.

[00:01:30] **Sandy Hanebrink:** Where's the remote? Just set it. All right. Since I'm doing technology, I thought we'll show off some, right?

[00:01:43] **Computer generated voice from the exoskeleton:** Feet together. Timing out.

[00:01:51] **Sandy Hanebrink:** Okay. So, there it is down there. I can't see it. So, what I'm going to start with is one, I don't have to do the sexual technology. So, I didn't include that, because I knew it was coming before mine. But as an occupational therapist and specifically an occupational therapist with TM what I tried to do is look at a sampling of technologies that people coming to the symposium. This by no means is an inclusive, but I just wanted to bridge the gap on some things. Is it going? It's fine. There we go. So, they had asked me to speak briefly about driving. I am not a driving evaluator. But briefly just wanting to look at some of the things is providing that resource. So if you have issues with motor control, cognitive control, whether it's upper extremity or lower extremity in that there are options to be able to drive also with vision and techniques, especially if you just have vision problems with one eye. So going to the association for driver rehabilitation specialist directories you'll be able to find someone in your area that can help you get that assessment done.

[00:03:24] There's also options for consumer solutions so you can look at the different type vehicles, the different type controls, the different type adaptations to move if you're hemiplegic and you can't drive with your right foot, you need to drive with your left foot things like that. The nets adapted vehicles, certified vehicle dealers and that are also listed. Sometimes this isn't updated as frequently, but if you email them then they can provide you a current list of certified. But also understanding with rental car companies people think

ADA is everything. ADA requires them to have some of the adaptations like hand controls and spinner knobs and things like that. You do have to request them in advance depending on the company. It's 48-72 hours, but they do not have to provide ramp vans.

[00:04:15] Most of them do have an agreement with an organization like mobility works or some of those so if you need the lift van or ramp van. That's not going to be there, but they cannot if you're just getting hand controls or other small adaptations like a different an extended foot pedal, the spinner knob and things like that. They can't charge you extra. So, if you need a compact vehicle you pay for a compact vehicle, you don't have to pay for just because they only put them on certain size vehicles. They can't charge you more. So that was kind of the important part with that on the slide. You'll see some different pictures of types of hand controls. Kind of a standard hand control is the first one at the top, you'll see a spinner knob. That is usually some people like it position down low, some people like it up at two o'clock.

[00:05:15] Other people like it other places, some people don't use them at all. Or the typical push down for gas, push forward for break. There are high tech controls which is the second picture at the top where somebody is driving with a more high-tech control enjoys it than this one. In some case you can see somebody with a quadriplegia. One of them is a steering mechanism or is the other is your acceleration and brake. Down in my far right, your far left you'll see an RV. RVs are also adapted now and you're seeing more and more of that with lifts or ramps systems, a full-size van with a lift versus your ramp vans, those can be side entry or rear entry. Not pictured would be like some of the hook arms that will come pick your wheelchair up and pull it into the back of your vehicle car toppers and that for stowing of equipment. And then my favorite are portable hand controls, because when I've already made that reservation and they inevitably at a rental car company don't have it available even though you've done all the pre-work, then you can travel with these and put them in the overhead bin and any car works. You just clamp them on and go.

[00:06:38] So home modifications a lot of times when you're looking for resources, if you look under your council on aging, a lot of them states that falls under the lieutenant governor's office. And you can find resources on aging and disability. A lot of times they just say aging and they forget us. Even illegally federally mandated it is aging and disability, but you can find many databases and resources common things to help with people with impaired mobility or just increase access or century changes is pictured here. So, at the top. I think every oven should have these because before I was paralyzed, I burned myself. And now I still do, but it's just a simple adhesive guard that goes on the racks and it keeps you from burning yourself when you touch the racks. Down in my far right, your left, you'll see a person using a couch cane, that's a standard product that fits underneath your furniture. Your furniture holds it down. And then you can use that as an aid to get up.

[00:07:49] Some of them come with a table attached. So, it gives you a TV tray if you will. There are portable and adjustable bed rails you can get so that if you need that for turning and things like that they just slide under the bed. I used to travel with one and just have the bellman put it on, because it just straps around the box spring and hooks. The middle picture there is drop hinge or recessed hinge. What that does is it fits in the normal hinge on the door and that allows the door to drop back even with the frame so it gives you two more inches of clearance to get into a bathroom without having to do major modifications. This is particularly important if people don't have funding to modify their home so that their walker and wheelchair can fit. Or if they're in a rental.

[00:08:47] Now these two, three pictures here are different types of retrofit shower heads that give you a slide control and the diverter at the bottom so it actually you just unscrew the shower head and then screw this in place and then the first one actually still requires you to drill and mount the bottom post. But it does

have the diverter at the bottom and has the slide. The one that screws in can also be used as a grab bar if it's installed properly. The second one you'll see the picture in the middle is an adhesive, that's the one to the right. It allows you and a lot of rental places if you rent you can make modifications, but the owner can require you to put it back to its original state. Or you may be just traveling to a family member's house or something they don't have the handheld shower you need.

[00:09:54] So what this allows is to use adhesive. It's a sticky back-to-mount. When I always caution people though is when they are using this it is made to hold a certain amount of pressure, but you are in a steam shower and it is adhesive. So over time that can loosen any time you're going to use a grab bar and type thing always make sure you check it before you use it as a means of transfer or you're going to face plant. What's nice about these controls is it takes a standard shower, no plumbing changes are needed, no plumbers are needed. So, it's an easy way to modify it. The last one also has multiple functions. So, it also allows the overhead shower to be on so that you can stay warm. Which for me is a problem, because if I get cold, I get very spastic. So, it allows the water head to continue to spray on me. Why I can use the handheld or I can do just the handheld.

[00:10:54] So if I don't want to wash my hair, but I just want to get cleaned up I can do that as well. So, modifications for mobility can be portable. The first pictures actually portable ramps that fold up like a suitcase so that you can use it to get in places modular ramp systems are a lot more durable and safer to install in your home. And cost wise with the price of lumber these days we've actually been modifying homes much cheaper with the modular system than with wood. Because wood is so expensive and then these don't have to get replaced. There's platform lifts down at the bottom you'll see a stair climber. A lot of people think they need structurally something sound with the wall or construction done and you don't they actually screw to the step themselves. So, there is some construction there you have to be able to get to under the step to through bolt um to secure those, but they just plug in or have batteries or a backup battery. They can also be installed on curve steps.

[00:12:06] The other pictures an elevator which is a residential elevator, but they also now make shaftless elevators which is nice, because if you're just going one to one and half floors you can install what's like a platform lift, but it looks cleaner and slicker like the elevator and they make them for both people who are going to be standing to use it who they can walk, but can't really do steps safely or at all or they make them big enough for wheelchairs. And so you do need to specify when you're getting those quotes, but because they're so readily used now in construction, what used to be like \$10,000 is now down to about 3000 with installation. Then this other I put here under home modification areas that's access tracks. I actually use that. There's it as a single square with the carry handle and I have two sets of three I think Janelle has two sets of five. It allows you to have beach access, but they can be installed permanently. And I actually have a set installed in my backyard so I can get out to where the lamp is and the garden is and things like that just over the top of our grass and the grass actually kind of comes through it a little bit. So, and when it does that it actually stabilizes it even more and they're relatively inexpensive, but gives you access if you're going to the lake or playgrounds or wherever where there's not accessible route, you can create one.

[00:13:57] So I wanted to do some vision technology and these are ready available devices that people need and but the biggest technology we have are smartphones. There's so much built-in technology and the accessibility features and apps and stuff that are out there to do so many things like reminders, color readers, screen readers, optical character recognition which means I can scan a document and it reads it back to me and that built into our phones, but also simple things like an extra wide, because our balance isn't as great, but an extra wide talking scale, talking glucose monitors, the bell mug which is pictured up here at

the right has sensors in it, so it tells how full the mug is for someone who's blind, and then the little whistler, the little orange device down the right-hand corner actually sits on top of a glass. And so, a friend of mine's a bartender and he's blind and he doesn't like to stick his finger, especially in COVID land, in people's drinks.

[00:15:06] So he uses one of these now, because that's how he used to figure out how full the glass was. People appreciate his finger, not in their glass that was my Christmas gift to him it's \$6. The other thing that's important is our prescriptions, right? And making sure that we have that. So now thanks to ADA, the pharmacies provide these labels that are easy to read and understand for people with cognitive issues and larger print and then as well as prescription readers. You can also buy a prescription reader like the middle picture here. But Walgreens, CVS and other pharmacies actually provide the label readers and it will give you everything including the prescription information like the brochure that usually comes with your prescription, all that is available. They also inexpensive is the talking pill reminder. So, it tells you it's time to take and you can program that.

[00:16:20] This is one of the best technologies for people with both cognitive and vision. It's relatively new and out, it's the OrCam and it actually clips to your glass or can be handheld. What's great about the OrCam my eye is it reads text, it reads close up and far, it recognizes faces. So I was telling Mike Levy he needs one of these, because he says he doesn't recognize faces. So it's smart technology and it'll tell you who's coming, it identifies products by way of barcode reading and that so it tells people what the item is that they're holding what if it's a box she can't really feel right. So it tells you that, recognizes barcodes, it recognizes currency both US and Canadian and they're working on other countries. And then it identifies colors, so no more wearing blues and brown mixes and stuff like that with your socks, it'll tell you the colors. They also have an AI version that helps track social encounters. So, this is new emerging technology, but it helps people who are blind. It's hard how much time are you spending with this person and this activity and that and it helps them put it into a way to modulate time-based on that interaction. And so, because it's AI it's smart it keeps learning you and giving you more data that those of us who are sighted take for granted.

[00:18:07] So some pretty cool technologies out there. The MyMe is what it's called. Is it like Google Glass? Yes, but this is a camera. So, you don't have this big thing in front of your face and looking like your space monster. So, it's a little more socially appealing and we find people use it and want to use it. You can pin it to your shirt or hold it. People who use canes to navigate clip it to their canes. The vision technology, the WayBand. This one is really cool because it does it by vibration so it allows you to set your path and it gives you the cues of where you are hypothetically through vibration on the wrist and it works with other GPS that are already available. So, you don't have to pay for this subscription or anything for specific app. Once you have the device it's good to go. So those who need some GPS-type features, it's a really nice piece of technology.

[00:19:19] So accessible computer access has gotten so much cheaper and built into other devices that a lot of people aren't aware exist. So, like with the iPad software now has built-in switch control. So, any Bluetooth switch can be added to it or a plug-in switch can be added to it for people to be able to control and navigate the system. So, people who are quadriplegics using sip-and-puff that's a switch or maybe they have an external switch or Bluetooth switch where they actually push a button or some type of triggering device can control the device. The other is the joysticks. This is PA Mobile graciously allowed me to bring this so people can look at the advances in technology in the chair. This joystick does infrared like your tv remotes. It does Bluetooth so you can control your computer, your phone and everything straight from the joystick so you don't need another external device to activate it. And I actually programmed in less than two minutes the tv remote. So, I can control the TV in my room, so it's that portable. I brought a Bluetooth plug that's, sorry it's on my lamp, so that I can actually turn a light on in my room. I forgot to unplug it and bring it, but just a little Bluetooth plugs that you can buy on Amazon or whatever you can plug that in, and now you have access and I can use the joystick as that access point.

[00:21:04] Up here on the right is just a combination of readily available over the market Google, ring, Alexa, Apple home kit, a regular smart plug and then the Nest remotes which now train and Honeywell all the different remotes now have remote access. Some of the things to keep in mind with environmental control with these is they are pretty limited to that location and they are dependent on internet to function versus the HouseMate which is down in the left corner, it's actually the size of a hockey puck. Once it learns the signals it works so there's reduces fail points. So it's specifically designed for people with disabilities versus these who are used for every day. Obviously, these are much cheaper than the HouseMate, but the ClickToPhone app that comes with HouseMate which is free if you have any type of Bluetooth joystick or Bluetooth switch access you can use that app to control your phone, on Apple or Android tablet or Microsoft computer, and that's free.

[00:22:25] So that gives you some more universal access. For devices specifically trained it allows a scanning mode so that you can more easily move across the screen get to a section and then select. So, it gives a little bit more control for people who need to scan things to scan or to move in quadrants to more rapidly select. So, for quadriplegics, it's a big advantage accessible gaming. There are readily available on the market or there's some that are specifically made. So, the two examples I have up here is a single-handed Xbox controller. You can actually order those and buy them off the Xbox site or off Amazon. And then the Singleton QuadStick allows for head control and sip-and-puff gaming and this is an actual user, Davison using it. He's actually a professional gamer. And then there's a link to 12 adapted gaming controllers that are out there and how to get them. So, you can access that through the website when they post these sessions. Accessible recreation, everything from adapting fishing reels. There's a cuff that can clip in for someone. There's also electric fishing reels, gun stands and electronic gun controls for those who want to do that.

[00:24:10] Things that are readily available are for scuba I have some webbed hands that I use, but I fatigue easily with that and can't last as long as everyone else. So, I bought one of these used on eBay for \$100 and so it's fabulous because I can tour all around, I use it in my friend's pool to chase our kids, so it's fun. With kayaking there's a lot of adaptations on the first picture is OR stand where it clips in and then you can just rotate so you don't have to have the strength to hold up the paddle, but you can then paddle. You'll see the middle picture is with outriggers. And then that's me launching on an accessible kayak launch. So, we've got about 70 miles of accessible kayaking now in South Carolina where you can portage to these different mobility braces. I just put an example most of the time you're going to work with your neurologist and your physical therapists and physiatrists for these, but I just want to show there are a lot of options. People don't like the ones in the middle, the plastic in the shoe kind of hot things they want something that can work with any shoes. So, you do have the seabed so that attaches to the shoe and kind of helps with that foot drop.

[00:25:45] You have an external foot drop brace that goes kind of on top and behind your shoe. It won't work with all shoes, but mostly it does with most tennis shoes and standard tie shoes dynamic AFOS where you can adjust the angles and the flexion ability depending on your tone. You know different kinds of drop foot braces and stuff to your custom ones made by your orthotic prosthetic companies. Mobility walkers have gone a long way from the first two up there with a standard walker or standard rolling walker Rollators. I personally hate Rollators, but people love them, because they have a seat, because you're walking with it out in front of you. It's not really ideal gate. But there are newer ones that you can walk inside it more similar to the one where they have the upright, more ergonomic walker where you can do it with your elbows and weight bear through your forearms instead of your wrist your gaiters that come from behind. There's even beach walkers now with the inflated tires so that you can actually stroll up and down the beach. And then the knee walkers now that also have seats.

[00:27:12] So people who have a lot of balance or tremors and that cannot and are worried about falls can use that and still propel themselves with their feet, but sitting down. Different types of crutches, getting away from the old-time crutches that break your plexus and then cause you more problems, but a lot of different

lost on crutches, but more importantly is the tips. So, you have some that flex, some that take absorption, so take some of the pressure off of your joints, and then also specialty tips, like spikes and ice tips and things like that, depending on what you're doing outside and the activities you're doing and definitely in weight, some of them are extremely heavy versus the newer ones are carbon fiber and that are much lighter, so again, energy. And then the ones that in the top middle that collapsed so that when you get to the table that you can collapse it and put it on the table instead of like me dropping my crutches everywhere.

[00:28:21] Wheelchair mobility, the advances in technology and choices that are available everywhere from the first one at the top. It's just a transport chair, the lightest, cheapest chair. It's just merely, I always say it's like taking grandma to get her hair done or into church or people who just need it that they're going to spend very limited time in it, but something that's light and easy to get in out of the car. We have a lot of seniors, that's the best option so that they don't injure themselves while just trying to put the wheelchair in and out of the car. To your custom rigid frame chairs, the next one over is a captain seat kind of mid-wheel drive power chair. The next one is the wheel that actually is a portable technically scooter, but wheelchair that real sleek looking. It has omni wheels so the wheels rotate this way and this way so it actually turns in space.

[00:29:27] They will come apart so you can throw it in a cab and not be restricted to just transport with a van to the easy chairs that fold. That's a travel power chair to a standard kind of lightweight folding chair. And then power chairs that have multiple seat function options like the first picture with the lady in the chair is seat elevated and leans forward. So instead of everybody haven't always go sideways approach to try to reach to get something, now to actually tip you forward so you can actually reach things from the cabinet on the counter. Chairs that will tilt and recline for pressure relief, you'll see summer front wheel drive summer mid-wheel drive, summer rear-wheel and that all depends on what you're wanting to do with it in preference. Standing chairs and then your scooters and portable scooters. One of the things with the scooters is we'll see a lot of people go to those, because they're lighter, but then they start having seating and positioning issues, so convenience versus positioning and then you start having back and specificity issues and things like that.

[00:30:51] Power Assist Mobility, man it has come a long way, SmartDrive is the first one there, it also comes with a smartwatch and a wired version. If you saw me in my other chair, I have a SmartDrive and I also have the wired version. So, if I don't want to tap to make it activate and turn off, I can push the button for it to go. And that's important because it's a Bluetooth connectivity and when you're in big cities or conventions where there's a lot of Bluetooth, the Bluetooth kicks on and off. And so, then the it may not be reliable. But with the wired I can override that or if my watch dies, I have an override. So as long as the smart drive is charged, I can use it, you have different emotion-type wheels where it's built into the wheel. For some people this is a better option, because they don't have to tap and control the wheelchair. So, if you have some quads find it harder to take their hand off the tap and then grab the wheels and control it like they would with a SmartDrive or at the very bottom the smooth, they do better with the wheels. The problem with the wheels are really heavy.

[00:32:06] So and if you need to take them off to get them in a cab or something like that, they're really heavy. They're like 40 lbs. of wheel. And if their battery dies, then you have that extra weight to push versus the SmartDrive and the smooth, it just tracks with you. Now we also have several add-ons out there with the firefly and some of the others that are add-ons that make it a manual power chair with like a joystick. And so, you just kind of drive onto it clips on and you can go again that gives you that portable feature, but depending on which one that unit is heavy like the e-motion wheels and that. So, you do have to consider the weight of that for getting in and out of the car. And then to other devices that put a power assist on the front. The beauty of these is it also gives you some breaking type resistance. So, people who benefit from a power assist to get up inclines and over uneven terrain. The problem is they don't have the handgrip and strength to go down hills to stop. There are disc brakes that can be added to your chair like disc brakes on

a bicycle. But it's very limited on where if there's a vendor in an area that actually knows how to install those where they will actually work.

[00:33:37] But with these you do have some braking ability, because just like scooters they resist as there's tension going down and as you take off the motor then it's going to give resistance. So, for those people who have trouble it's again it's an easy clip-on, clip-off. So, a friend of mine uses this, because she had shoulder replacement and so she actually puts this on her chair, gets to where she's going and unclips it and leaves it by the wall and then gets around when she's there she just uses it for distance or when she's on trails or grass. Then you've got specialty equipment like the action tracker it's like a tank tread, I see a lot of people use that for hunting or just outdoor. If they live on farms and things that's present to that people last year makes a chair that does well on the beach and things like that. Again, you've got hand cycles that can attach to your chair, so you're using your chair and then an add-on for recreational cycle cycling.

[00:35:01] You have upright seated hand cycles and then you're more lower ones like you see in competition, beach wheelchairs that someone else pushes, beach wheelchairs that you can push, there's power beach wheelchairs. And then the Mobi is actually designed to go into the water versus the PVC beach chair next to it. You can get up to the water, but they sit so high. You're not usually gonna use that to get in the water, because it's going to float away [laughing] while you're trying to get in and out. But the Mobi, it's designed so you can transfer into the water. The racing chair there and then the Alinker-- I'm actually testing with the SuitX right now, and that's basically somebody can sit on it and you propel it with your feet. So, some of you guys were talking about you like to run, but you're afraid of falling. This actually folds too. So it'll fold in half so it'll fit in your trunk. So, it's a good option and it's still small enough that you can get into a store and stuff with it.

[00:36:17] You're not going to go into like a little boutique shop. You're going to go and straighten back out, but it's got a pretty wide turning range, but it's pretty stable. The other is the RaceRunner and that's actually used in competition, but I have friends of mine that are ataxic and they use this, because they can lean on to it, hold on and then can really run at a better speed than just recreational running. And so, they like this, because it gives them the stability, but and support they need, helps keep some pressure off their hips and that, but still enables them to run. So, a lot of the folks in here that have that-- got pretty good return, but you don't have a normal gait and you're starting to have issues of cumulative trauma and stress from muscles being too tight and walking in a funny gait and things like that sometimes having the support of these kind of devices, enables you to keep doing what you enjoy and be safer.

[00:37:18] The walking technologies is my favorite right now because I've had this for a little over a year and been involved with some of the development of different ones. So, the first one featured is my favorite, the Phoenix. The reason I like it is because it's the lightest weight and it's the least expensive, but it's also adjustable and you can adjust it and for use in the clinics without tools, so it can go from anywhere from four foot eight to six foot four just in just out and other people can use it. So, the day that I got mine delivered actually I let three other people try it. And in an hour, we tested it with three different people that went from a height of five foot two to six foot four. And so, we're able to allow them to try it. Mine has a little bit of customization specific for me, but it's pretty much what it is. Indigo is out of Vanderbilt, Shepherd Center worked with this one and the development it tends to be good to mid-thoracic once you get upper thoracic you start having some issues with trunk stability and balance with some people, but I know people who are pretty high even to one that have been able to use it.

[00:38:40] For me, I don't have enough trunk. I like the fact that this comes up, because as you can see, I'm standing here and it's the suit is holding me up so as long as I have something to keep my balance and lean on this podium. I'm okay ReWalk was the first one to get FDA approval and the Medicare code. That's the

one in the far upper right. The difference in it and the one I'm wearing is it's a little bulkier. And for parts and stuff for the clinic you have to buy different leg pieces and stuff to be able to fit different people. Same with the indigo, you can't just adjust them down in the very bottom. That little purple like thing that is for Bioness foot drop device. Again, another walking technology, not an exoskeleton. E-MAG is the next brace. It looks like a traditional KFO, but it has an electronic knee that locks and unlocks so that's an active stance. The person has to have the ability to control that with their own muscles even if they don't have full strength, but enough to trigger the lock and unlock.

[00:40:05] And then the C-Brace is the final one. And that is actually takes prosthetic the C-Leg technology and puts it in an orthotic. With that one, you have to have-- its only at the knee. Motors at the knee versus Phoenix is a hip and knee. And so, you have to have at least a three in your hip flexors and that to be able to trigger it. I did try this one even though I don't have it and after an hour I was so exhausted it was like okay I'm done for a week, because we were trying to trick it to go by throwing my head in my trunk and using my arms. And we realized you're a quad, you don't have enough arms for that. And so, it wasn't pretty, but for me it was exciting, because at the time it was the first time that's something actually moved my foot through. It wasn't just like the old lock KAFOs where I was just dragging myself and it wasn't pretty. The other thing to keep in mind with these is there are things you have to consider. So, like for me I hadn't walked in 34 years. So, there were a lot of things I had to get checked before I could even start with this. I've done a standing program and use blocking KAFOs my entire disabled life.

[00:41:26] So I had the bone density. I didn't have contractures. We were able to manage my tone, but one thing I did have to work on was my orthostatic hypotension because I would pass out. And so, \$65,000 faceplant didn't sound like something I wanted to do. So, we did have to do that. There are other people who were you saw in the talk on bowel and bladder that have stomas or in our super pubic devices. If the bracing strapping and that for the exoskeleton comes across those that may be contraindicated, you may not be able to use it. So, it really depends on the person. Some of these are more programmable than others and so dealing with tone, leg length discrepancies and different things like that are all stuff that you would work with the therapist and the companies to accommodate.

[00:42:33] So, one of the things that my organization does, we have a program called Walk2Walk and we have a website where people can sign-up to do events or to just walk and have people sponsor them and everything that we do is to raise funds to help advocate for insurance to get approved these technologies, but also to help pay for the technologies for the people who have successfully completed trials. And so, we're trying to create a global community where people walk so others can walk again. But it's cool, because you can say go in and log in how many steps you've walked and it shows how many steps people have walked so that others can walk. So that's something new, we're doing, we have a few website glitches to get fixed, but it is up and running and individuals can set up their own event to raise for themselves. And then that's my contact information. So, I know I didn't cover all the type technology so people have questions about a specific thing that they really are dying to do. I can probably tell you if there's a technology out there.

[00:43:51] **Dr. Carlos A. Pardo:** Thank you very much. Sandy. This was very informative and very helpful for many of us. We are going to move for lunch and I will advise you to come back around 1:30.

[00:44:08] **Audience Member:** Dr. Pardo, maybe just if we can answer one quick question that came from the online folks.

[00:44:13] **Dr. Carlos A. Pardo:** Okay. Absolutely. Yes, please.

[00:44:16] **Audience Member:** All right. Thank you, Sandy, for this inspiring talk. Does insurance cover any of the mobile walking technologies?

[00:44:26] **Sandy Hanebrink:** It depends. It depends on which technology and which insurance. We've had pretty good luck with a lot of the of course the VA covering Medicaid waiver programs for head and spinal cord injury waivers. And then with the Exoskeleton technologies, ReWalk has a CMS code which means a Medicare code, but I'm not aware of one yet that has actually been paid by Medicare. I know there's several in the appeals process, because the problem is even though there's a code the regional providers where processes through are still going off old data that they're not covered. But federal lawsuits have changed the status and set precedent on excess scale and technology that they're no longer investigational experimental that they the research and efficacy is present.

[00:45:28] So old policies are challengeable, Anthem covers pretty well and most parts of the country for Bioness and the E-MAG sometimes Exoskeleton, Federal Insurance, we're still we're still battling with, so it's still an ongoing thing. Bioness is covered by many insurances now. It really depends. And that's for walking technologies now for the power assist and that some of the devices have codes and are easily covered in some of them, because the companies did them as recreational and not medical devices. They don't have a code. We have successfully gotten some funded under miscellaneous code and then just written up the justification. But it just depends if you've got doctors and therapists willing to take the time to fight for those justifications.

[00:46:29] **Audience Member:** Great. Thank you so much. And someone online is also asking for a link of who manufactures the clip-on-hand wheel-propelled bike, but we can...

[00:46:38] **Sandy Hanebrink:** There's several, but I can provide that. Quickie makes one, Invacare makes one. And there's another one out of Sweden, but they both have them.

[00:46:52] **Audience Member:** Perfect. Thank you. That's all. Thank you, Dr. Pardo.

[00:46:55] **Dr. Carlos A. Pardo:** Thank you. We'll be back 1:30.