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>> Bill: Thank you for joining us today for United Spinal webinar's series today, nutrition and exercise steps for wheelchair users. My name is Bill and I'll be your moderator for today's presentation. Today's webinar is one of a continuing series that United Spinal Association will be hosting and all of our webinars will be archived on our website. [www.unitedspinalcord.org](http://www.unitedspinalcord.org). We will have time after today's presentation for questions. Please use the questions to write in any questions that you may have and we'll do our best to get to them today. For any questions remaining unanswered, please post questions directly to the speaker that will be displayed on the last slide. Today's presenters or miss Jennifer French, MBA and Dr. Kim Anderson-Erisman, PHD. Their PowerPoint presentation is available for download as a handout on your webinar control panel.

>> Jen French became a quadraplegic and SEI injury in 1998. She is an active user of the implantable stand and transfer system provided by the Cleveland FES Center, the first woman to receive such a system. She's the co-founder and Executive Director of 501(c)(3) nonprofit organization and they're a tech network with a focus to educate about and advocate for access to neuro-technology. French is also the associate publisher and senior editor of Neuro Tech Reports, a leading news analysis publication from the industry. She is a silver medalist from a 2012 Para Olympic Games and is a 2012 Rolex yatz woman of the year, the first woman with a disability to receive this distinction. She's the

co-founder and development officer of the Warrior Selling Program, Ameri-time Education Program for wounded, ill and injured service members through the USMMA Sailing Foundation. Dr. Anderson is a Research Associate Professor and Director of Education for the Miami Project Paralysis at the University of Miami Miller School of Medicine. Research is focused on translational investigations and bridging the gap between basic science, clinical science and public community living with spinal cord injury. Her training spans a spectrum of spinal cord injury research from cellular and molecular studies, to whole animal and behavioral studies and human clinical research. Now as a faculty member at the University of California Irvine and University of Miami. Her current projects focus on aging-related change in bladder health after SCI. Determining the minimum amount of exercise and local motive training required for clinical trials, targeting chronic SCI and identifying the facilitators and barriers to clinical trial participation from the SEI consumer perspective. In addition to pursuing her own research regarding chronic injury, she serves as a scientific interface to the public for the diverse array of research being conducted at the Miami Project and is now also managing the first cellular transplantation clinical trial. Please note the instructions for use of closed captioning for this webinar that appear in the chat window. And now I would like to hand it off to Miss Jen French and Kim Anderson for their presentation. Jen.

>> Jen: Thanks, Bill. Thanks for that great introduction and welcome everyone to our webinar. We appreciate you taking up the time to -- to come to this webinar series hosted through the United Spinal Association and it looks like we have quite a bit of interest in terms of getting fit for 2016. So let's get started.

One of the resources again to some of the housekeeping is that if you want to ask a question during the webinar, you have a question box that is over on your screen. Feel free to type that in. We'll address those questions when we get to the end of the webinar. Also as Bill had mentioned, that any of the questions that we don't address both my contact information and Kim's will be available at the end of the presentation.

Also, take note on your screen you'll see a handout area. The slide show that we're showing you today is in a PDF format on -- that you can download. We will be providing a lot of different resources during this presentation so don't feel that you have to write everything down. That is why we provide that handout to you with all the hyperlinks to the websites and the resources that we'll be providing. So let's get started.

First we want to introduce both of our organizations. Kim, would you like to introduce the Miami Project?

>> Kim: Yes. The Miami Project is dedicated to finding more effective treatments and ultimately different cures for paralysis resulting from spinal cord injury and we operate entirely within The University of Miami.

>> Jennifer: And the Neurotech Network, we're a nonprofit organization and we focus on education and advocacy to access neuro technology devices, therapy and treatments for people with impairments as well as communicating that to caregivers and the medical professionals who care for those people with neural impairments. Both of our websites there are with the link if you want to learn more with either one or both of our organizations.

A little disclaimer we have to read out to you. We want to let you know that the information that we're presenting in this webinar is not meant to replace the advice of a medical professional and you should consult a Health Care Professional familiar with your specific case concerns and conditions. Neurotech Network and its representatives do not endorse, rate, sell, distribute, prescribe, administer or recommend any products, procedures or services but we highly recommend you take the information to a trained professional who is familiar with your case. Okay. So we've got that disclaimer and we're making the lawyers happy so really get to what we're going to be talking about today. What we're presenting we're presenting some results from a study about barriers to exercise for wheelchair users. We'll then go into some of the customized home-based exercise resources. Also some nutrition tips and resources particularly for people who are wheelchair users. Then we're going to go into exercise and technology. Apps, adaptations and access. But before we get started we wanted to put a poll out to you all. And that poll question to you is what is your priority for 2016? Is it nutrition? Exercise? Or both? Go ahead and put in your response. It looks like 79% of our audience said that both of their priorities for 2016. That is actually really good. Because it takes nutrition and exercise to help get that weight off.

>> Jennifer: Exactly. Now that we know that you're interested in both nutrition and exercise we'll go into the next part of our presentation. Kim.

>> Kim: Okay. So what we're going to start out with is a little bit of results that -- from a study I did a couple of years ago asking people with spinal cord injury that use wheelchairs what are some of the barriers

that they experience or they perceive regarding exercise and in their community. So what we identified are some of the most prevalent barriers to not exercising. Lack of energy, lack of motivation, lack of time. These are things that many people not just wheelchair users experience. But, also, not knowing where to exercise is really an important barrier and if there is a cost to the program. So there is also -- these are the very prevalent barriers. There is also some barriers that are actually the most impactful in whether or not an individual will have an issue with exercise or not. Some of those most impactful barriers are the thought that maybe exercise will make your condition worse so that's not always the case. You do want to be able to consult with your physician.

Some people feel that they're too lazy to exercise or that the exercise is too difficult. And another really big point is a lot of people felt that they did not know how to exercise. So we're going to give you some tips on how to start to overcome some of these barriers but a couple of really important points I want to pull out from that study that we found from individuals was that more than half of those individuals that participated in this survey said that their physicians advised them to exercise. Less than a quarter actually received any instructions from their doctor regarding what kind of exercises to engage in. That is really important that we try to address that. Also, not having exercise equipment or exercises that you can do in your own home was a greater barrier at not exercising. And, then, finally, we have lack of transportation did not necessarily decrease the odds of being exerciser. But not knowing we're an accessible fitness center did. So knowledge is really, really important.

So let's get into some -- our next polling question before we start to talk about home base exercises that you can do.

But our question is, do you think that your disability has contributed to the difficulty losing weight in the past or not? Okay, yes. Overwhelmingly. 82% of the people said that their disability makes it more difficult to lose weight.

Let's figure out how we can try to overcome some of those obstacles. So the first thing that we're going to show here -- let me catch up on this slide.

>> Jennifer: Try that now, Kim.

>> Kim: Are you able to advance?

>> Jennifer: Why don't you try it right now.

>> Kim: What are some exercises that we can do if we use a

wheelchair. I'm going to show you some things that we have adapted for home. This is an example that you -- that is using working on your biceps and you can do it by lifting a dumbbell here of various sizes or you can use -- I'm going zero show you some other exercises that you can do with the door base system and elastic bands. You can do biceps curl with that system. You can get wrist weights that wraparound your wrist that you can do to do bicep curls with.

There is overhead press that you can do with a dumbbell as well or with the resistive stand. This is called a horizontal row where you pull the elastic band backwards. See how the system is set up on the door here? There is many different varieties of this and, then, you can purchase elastic bands that have different resistant weights calculated to them. And you can increase your resistance in that direction. Another thing that is important is a lat pull down. These are working your shoulder and upper body -- upper extremity muscles. Triceps discs, using the door base elastic band system or if you have the ability you can do it just by lifting yourself up on the wheels of your wheelchair. Or even your armrest. Also vertical butterfly where you pull the elastic band way towards the side. These all work really important muscle in your arms and your shoulder that can help strengthen your body and for those individuals that -- don't have the ability to go to an exercise facility, this is relatively inexpensive way that you can do these exercises at home. Now, we have more instructions at the end of the webinar here. You can go to the Miami Project website and other websites and get detailed instructions on how much weight should I do, how many repetitions should I do and all of those kind of things.

The next thing I talk about is your shoulder which is really important. There is a program out there called stomp. It stands for strengthening and optimal movements for painful shoulders and we have the instructions that came out here in 2011 that are hosted on our website and it was posted by some researchers in calling foreign and these instructions here that you can look at, these are a couple of pictures here. There is more pictures in the instructions. It tells you how to stretch your hollered if you have pain and this has been demonstrated to help reduce the pain in the shoulder and also how to strengthen them similar to some of the examples I was showing you in the slides previous to this. So it is really important. Our shoulder were not meant to do repetitive movement all the time. So if you have painful shoulder this can be very helpful in to try to reduce some of that pain and strengthen the muscles that would then counterbalance that. Okay. You can also do aerobics

and these are two examples of videos that have people in wheelchairs doing aerobics. You can actually go to this website here for Kaiser and follow along with the aerobics video on your computer or your phone. It is about a 30 minute video. And then, also, the NCHPAD has aerobic exercises for people with spinal cord injury and they have many types of videos that you can look at.

Aerobics is really important because it gets your heart going and then, finally, we have yoga which can be very good for breathing, for core strengthening, for stretching and flexibility and there are a couple of different organizations that have adapted yoga. You can see two of those listed here. One with the mind body solutions and the other one here with get fit where you sit. And, also, just today, the Kessler Foundation talks about a video about integrating yoga with spinal injury care and treatment. Those are really, really good resources and by doing strengthening, aerobics and yoga stretching you can really get a well-rounded workout.

So now let's talk a little bit about nutrition. Some tips and resources there. So this back here is really, really good resource for spinal cord injury, eating well and living well. And it breaks down each of the different areas where you may have secondary complications from spinal cord injury.

So, for example, with pain, with bladder health, bowel health and pressure sores, depression, it really gives you good information about what kinds of foods to eat that can really help improve these different conditions. Secondary conditions.

And another good resource is video that was hosted by Craig hospital that talks about nutrition after spinal cord injury and how to start to get an educational introduction to that.

Another thing I just want to tell you about because reading the labels can be very overwhelming. So this resource by Craig hospital helps to us break it down. So with your diet, what you really want to do is limit your calories so that about all of the fat that you get in your diet is about 30%. Every diet not any more. So what you can do when you're looking at the labels to calculate the percentage of fat is look at the total number of calories per serving here and then the calories that are coming from fat. So you would divide the number of calories coming from fat divided by the total number of calories and you get the percentage of fat. This can give you a rough guide here.

Some of the main things that you really want to look at when you're reading the label is serving size. It tells you proportion in one

serving. That tells you how much these other nutrients are in that serving.

Fat and cholesterol and sodium, you really want to try to limit those but you want to try to make sure that you're going to get enough fiber and vitamins and minerals. So these are just some of the main areas to look at and the resource there from Craig hospital cutting the fat can really get into more details. We have that resource at the end of the webinar as well.

And then lastly let's talk a little bit about fat. We hear about good fats and bad fats. Some of the good fats that you can put in your diet what are we call monounsaturated and polyunsaturated fats. Some examples of that are canola oil, olive oil, peanut oil, peanuts, avocados and these are kinds of thing. For example, if you start cooking with olive oil instead of vegetable oil. That can be one easy way to start to incorporate this in your diet. Bad fats are saturated. So butter, cheese, red meat, egg yolk, eating a lot of these is what you really want to try to avoid. But the most important point about nutrition, remember, everything in moderation. So it is easy to get overwhelmed so you really want to start with making small changes. So one thing that I mentioned, for example, was -- instead of using vegetable oil to cook your food start maybe using olive oil or one little thing at a time like that. So maybe instead of using regular pasta use wheat pasta. Those little things slowly begin to make it easier to eat more healthy. And you don't want to go to any stream. So not too much and not too little. So that is the important thing. Everything in moderation.

Now we're going to hand it over to Jen and she's going to start talking about technology.

>> Jen: Thanks, Kim. We'll start talking about exercise and Kim introduced great ways to exercise at home but we have some other exercise resources for you as well as how it integrates with technology. We'll talk about some of the smartphone app, some of the adaptive monitoring systems, technology for fitness and how do we access it? That is always a question that we get.

So first let's go into smartphone apps and the FDA. So the FDA just recently Kim out with guidance on mobile medical apps and, so, why do we care about the FDA monitoring what mobile medical apps are? Well, the reason they came out with this is really mostly for medical devices because there is a proliferation of medical devices that are now interacting with our smart phones. But there is also leading over to a lot of the other monitoring systems if we're relying on that information

coming over on to our smart phones and monitoring our body and we're relying on our health information, the FDA wants to make sure that they're meeting certain guidelines. So they published those guidelines. Just recently on the website and the website information is here particularly for consumers so you're aware what kind of guidelines you should look for if you're looking to purchase any type of medical device and/or medical monitoring system. That interacts with your smartphone. This will help to keep you as an educated consumer.

What are some of the smartphone apps out there. There is a whole bunch. As you go if you go to an app store you'll be able to find lots of different types of smartphone apps for exercise but not all of them apply to people who are wheelchair users. This is just a short list that they pulled from two resources that we found that had really long list and exhaustive list and the two links at the bottom of this screen. The Florida Spinal Cord Injury Resource Center and Reeve Foundation. We wanted to highlight some. The first one is breathe. We all need to breathe but we all don't always realize that our lung capacity can be limited and it is really important, regardless of your level of injury, that you maintain good lung health. So this is an app that really provides good guidelines on doing exercises for breathing to improve your lung capacity.

Also, you want to monitor your heart rate. This is a neat app that you can use. You can just put your index finger to the camera on your smartphone and it will tell you what your heart rate is. Now, of course, you need a smartphone with a camera but it is an app that you can use to just make sure that you're keeping an eye on your heart rate.

I stretch is another app that was available. It was really developed for people that sit at desks a lot but I mean it was wheelchair users doing a lot of sitting as well. What it does, it provides some stretch and lengthening of your upper body while you sit in a chair. It focuses on areas of the neck, shoulder and back for stretching and of course we know stretching helps our range of motion. That is a great app to be able to use.

Another app called myotomes is an interesting app that is available that provides for you to do a self-examination to pertain what the movements are that you have that are associated with each vertebrae level on your spinal cord. This is a really neat app that really maps it out for you what movements you have and where it relates into your spinal cord.

Another one is called the physiotherapy exercises. This -- this app I really love has over 600 exercises for people with spinal cord injuries



and neurological conditions and really focuses on improving strength, flexibility and fitness and gives you the exercises that do not require manual handling by a physical therapist. So it will really give you some great resources to find and how to perform those types of exercises.

So we talk about our body. We talk about our lungs. We talk about our heart. But we don't always talk about our brain. Our brain and cognitive health is important as well. There is lots of apps out there in terms of being able to exercise our brain like luminosity or fit brain trainer. This one is one that we posted out. It is from the neuro technology world but it is the posit science and they actually post quite a few free games on their app which is designed to exercise and train your brain for cognitive health.

When we think about it, it is mind and body that we have to make sure that we maintain. Those are just a few of those apps and again more can be found on the resources provided at the bottom of the screen.

Some smartphone apps for nutrition, again there is a whole exhaustive list. We pulled out a few. Again you can find more. That is on the bottom of your screen. This is one I use a bit called epi curious recipes. Say you have something in your pantry and kitchen and you don't have any idea what in the world you're going to cook using that ingredient. You can go to this app and it will look up a bunch of different recipes that are easy to use and you can add to this app. It can also create a shopping list for you, too, so when you go to the grocery store you have the ingredients that you need to properly make those recipes. Go meal is a great one for those of us that eat out quite frequently. It is an app that provides nutrition information. For either items that you find in a grocery store and/or for typical meals you find in a restaurant. That includes the meals you're going to get through the drive-thru. It helps to give you that type of nutrition information so before you order, you can have an idea of what you're actually consuming.

So nutrition is also about water. It is about fluids as well. Not just meals. So this app actually helps to monitor how much drinking or how much water you're drinking throughout the day. So as we know those of us living with spinal cord injuries or even neural logical conditions that relate to our bladder we need to keep good bladder health and that is drinking enough water a day. This is a good app to keep you disciplined. Fooducate is another nutrition education app. The neat thing about this app all you have to do is scan the bar code on an item and it will pop up the nutrition information for that food.

And finally the snack app for. Those of us that have sweet teeth and we know about this time of day we're waiting for that sweet tooth to have with our afternoon coffee or tea. This is a great app to be able to try to make better choices on the snack that we're grabbing in the afternoon.

Now, there is a lot of wearable monitors out there. So there is the Niki fuel band and we have the fit bit that is really popular. Any of you who are wheelchair users out there you'll find that they're not so great for those of us that are wheelchair users. Some of these apps don't really even apply or even register when we're using those -- a wheelchair.

There is a couple of different wearable monitors being developed specifically for people with wheelchairs. This is one of them. This is from a company called chaotic moon. They call it the free wheel. It is actually developed -- this was first spearheaded by a January named Tyler who works for this company and the focus was to develop a good monitoring system for wheelchair users. So this device uses sensors in the wheelchair, gyroscope, accelerometer, different types of sensors and Bluetooth so it collects that information and sends it to your cell phone app so that you can see what type of activity that you're doing while you're using the device. The link is here and I believe this is not available for commercial sale as of yet. But again, you can go to the website and stay -- see the monitoring on this as it monitors your health.

Another device that is being developed out of The University of Alabama-Birmingham is called the TextMe. It is the telehealth exercise training for monitoring and evaluation of home-based exercise. This has been in development in conjunction with the RECK tag and what it uses is a monitoring system. You can see here how you put the monitoring system on your body. It has a Bluetooth to a mobile device and then that is information that is sent via the Internet to Health Care Professional who was monitoring your health. That way you can get the advice from a Health Care Professional or a personal trainer that is kind of the intent once they get this available on the market. To be able to monitor your health and give you recommendations from the behavior that they see from this type of device. And again it is still in development. But it is -- if you want more resources you can find that over at the University of Alabama Birmingham. Two devices being developed out of The University of Pittsburgh, Mr. Hiremath and Dr. Kings lab at the University of Pittsburgh are these two devices which are really neat. So one is called the G-WRM, which is a gyroscope, a gyroscope wearable monitor. You can see it right here on the wheel. You have a little device here or

you can put it on a hand cycle right here. This monitoring system sends via Bluetooth to a smartphone app to give you the information that your distance went and try to help calculate some of the health situations as you're actually using this device. Another device being developed is called the PAMS. Physical activity monitoring system that is being developed out of The University of Pittsburgh. It is a band you wear around your arm and it also has a monitor here that you stick to the bottom of your wheelchair. Again it sends Bluetooth information to your smartphone for your wheel rotation, your activity and it is a great way to be able to monitor. And again this is being developed out of The University of Pittsburgh and you can see the information below to access more information about that.

Also some other technologies that are readily available now that you can use to integrate into your exercise plan. Kim showed some great home exercises and some simple ways to use from a traditional standpoint. We're going to go into the technology that is available to help wheelchair users exercise. One of them is the video games.

So we have lots of video gamers who love to play in the world of virtual reality, but there is some great video games that you could integrate with exercise. Some of the key ones that have been found particularly for those out of the shepherd center that have been working on this is tennis, boxing and dance. Those are three great video games to be able to get your body moving.

And, also, for those that might not have the hand control or the handgrip to be able to hold on to for instance the tennis racket if you will when you're playing these video games, this actually has a couple of different links to adaptive controllers that you can have for video games that might have some upper extremity limitations.

There is also a lot of technology for movement systems. And so we have seen the news quite frequently about exoskeletons and what they're able to do. There is a lot of research coming out very recently about the health and benefits cardiovascular and pulmonary health if you will for using these type of systems and there is a list of systems that are currently available. Some of them are still in research mode. Some of them are being used in hospitals. Some of them are available for home use. But there are the links to all of those different types of exoskeletons.

Also, for those with upper extremity that need assistance from upper extremity movement systems, we also have a list of those as well.

The CyberGlove, the Hocoma and the Motorika and Myomo are types for the upper extremities and to learn more about those devices as well as how you can access them.

One device area that is near and dear to my heart in terms of exercising is called Neural Muscular Electrical Stimulation or NMES. These are available on the market for quite some time. It is similar to a TENS unit but it is not a TENS unit. TENS units work at a different frequency while the NMES systems work to actually contract the muscle. So sometimes people tend to mix up what an NMES system is compared to a TENS unit. Here are some links to the different types of suffers stimulation systems. A lot of these work with electrodes that you'll put on surface of your skin. You'll connect them to these small boxes that you can program and a lot of these different types of companies that sell them give you guidance in terms of how do use the device.

The first three companies, the NeuroTech Group, DJO Global, RS Medical. All of those devices are only available through a prescription. We recommend you go to a physical therapist or your primary care physician to get a prescription to be able to get access to one of these devices. But those medical professionals particularly physical therapist can give you guidance how to use these devices properly and safely for the goals that you're trying to meet for your exercise.

Interestingly enough there is a company called Compex who has recently came out with an over-the-counter electrical stimulation device. This is one of the first electrical stimulation devices that are available without a prescription. They have been available for quite some time. But this one is really neat because it is a wireless one. It has four different channels, four different wireless electrodes that you can put into different muscle groups. They also have wired electrode systems on their website as well that are available for a low cost but again this device is not -- does not require a prescription and it is used quite frequently by personal trainers, by professional athletes, Olympic and para athletes as well. Here is the website to be able to access this device.

Just as an aside, complex medical is actually owned by DJO Global but they do sell these devices as a separate company. So you can find that out as well.

Functional electrical stimulation or FES has been around for quite frequently and there is a lot of published research in terms of the health benefits of using electrical stimulation for cycling. We have quite a few of those companies listed here. We have restorative therapies and RECK Motomed and Hasomed and therapeutic alliances and new company

called Myolyn. These are all cycling and available in clinic and also available for use in home. So you can check out that as well if you're looking at getting an FES cycling system at home.

There is also another device company called the wearable therapy which basically develops wearable systems with surface electrodes embedded into the garment so that way it can really truly target the area that you're trying to stimulate and exercise. Another area of FES exercise coming into fruition is called FES rowing. Some of the first clinical trials took place in the UK but it is definitely over here in the US as well. You can find out more about FES rowing using a traditional rowing machine here at this website as well.

There's also systems called vibration systems. Now, Kim and I did a whole webinar on this last year. And they are classified, a lot of them are classified as exercise systems. We'll provide you with the link to that webinar at the end of this presentation but we just wanted to introduce these to you and there is quite a few different companies out there that provide these types of vibration plates. Some of them, which you can see here, they require standing for those of you that can stand and are able to stand and might have balance issues but you can be able to hold on. Some of them have seated systems like a plat or a platform that you sit on that you can use as well. For these type of vibration systems. Again these systems are available in clinic but you can also purchase them for home use as well. Some gyms you'll be able to find these types of vibration systems as well.

So again, how do you access these types of technologies? This is a common question. Some of the technology that we showed can be relatively expensive and some of them can be for home use and quite small. Like we introduced the different types of smartphone apps or the NNEM systems which can easily be thrown into a pocket and sent home. A lot of other technologies are available at home but if it is not economically possible what is another way you can find access to these devices? Really what we're finding there is all of these -- a lot of programs popping up around the country and their post rehab programs that can give you an affordable way to access these types of technologies like FES cycling and rowing and vibration systems and even different types of wearable technologies.

And we kind of classify them into three different areas. Into clinical programs, stand alone programs or after care programs. And then public access and private gym programs.

Clinic access programs here is a couple of examples of the clinical

access programs that are available. These programs are typically affiliated with a hospital or with a rehabilitation center. A lot of them provide either access to a separate gym for like a gym membership if you will, or they use their physical therapy facilities after hours which is a great way to be able to access the types of technology that we presented today. A lot of these programs have either physical therapist, physical therapist assistants on staff during those hours so you can use them as well as a resource for your exercise plans. We have again some of them listed here with all of the websites.

The second program and you can see there is a lot of them are what we call stand alone programs. These are programs that are not affiliated with a rehabilitation hospital or with a rehabilitation facility but what they do, do, they provide access to the -- to a lot of these type of technologies, FES cycling and vibration systems and even some of those movement systems to the people that join them. You join them typically like a gym. You can go in and use it for either by hours or by month, depending on the structure. And -- but be aware that typically they'll have either a personal trainer on staff and sometimes a physical therapist assistant on staff. So again, you want to check out and research these programs. This is only a listing of a few of them. Obviously with the small print we could not fit them all on to the screen but there is a lot of them available to give again some more affordable access to the technology that we had presented.

And then finally there is community programs. The spinal cord, the United Spinal Association and their resource center provide some great resources how to access some of these community programs as well as NCHPAD which is National Center on Health and Physical Activity and Disability. Kim had mentioned some of the videos earlier that they provide, but they also had resources how to access community programs.

There's also a wide array of wellness centers and YNCAs. Now, not all of them provide exercise systems that are specifically for people with wheelchairs but they do provide ways for you to be able to access those and adaptations that you can have to be able to get access to some health facilities.

Also, quite a few municipalities or cities have therapeutic recreation departments. Those are great ways to get in touch with your parks and rec. and last one is again parks and rec. ration. Get in touch with your parks and rec. ration department. They will typically provide either accessible means to be able to get through your park system so you can use their trail systems first or they might have specific programming

for people with disabilities through their therapeutic recreation department. So again that is another great way to get move and get fit in to 2016.

A few more videos. Kim had mentioned some videos earlier in the presentation but we just wanted to give you the link to the whole exercise video list that's provided by NCHPAD for people that are wheelchair users or with limited or low mow built and they have a whole listing that are for disability specific, for older adults and seniors. Seated exercises. Exercises that you can do in the water as well as some additional resources for yoga and Tai Chi this is a great website to be able to get access to those videos and be able to find resources for yourself.

There is also two really neat YouTube channels that are out there with additional libraries. Healthy tomorrow as well as wheelchair fitness solutions. Those are two other YouTube channels that you can go on and find very useful exercise videos for wheelchair users.

Finally we wanted to leave you with a couple of pages of resources that you can access. We have emphasized the national center for health and fiscal activity and disability. A great resource for wheelchair users and wide array of different disabilities. Miami Project staying healthy is one that Kim had mentioned earlier through the Miami Project that has some great resources that she had presented as well. There is also at the University of Washington has exercise for older adults with disabilities. There is also this interesting NARIC, rehabilitation center for the multi-media collection which is again another video collection. Also on the Neurotech website we provide tech sheets for exercising, weak or paralyzed muscles and also listing of resources on fact sheets to learn more about exoskeletons and robotics for mobility. We also want to give you the resources of some previous webinars that Kim and I hosted in the past that we -- we presented a few things on today but you can see the full webinars in the archives on the United Spinal website. The first one is rehab is over. Now what? That's a whole presentation on post rehab programs. Both those clinical programs, the stand alone programs and the community programs that we had mentioned earlier.

Paralysis and exercise. Cutting edge fitness for wheelchair users. This is again talking about technology and fitness.

And, finally, last year we did a webinar on vibration therapy and this is the archive for that webinar as well. So that concludes our webinar. We have both of our resources here as we had mentioned. Kim's e-mail address as well as mine. And if you have any questions that we might not be able to answer at the end of this, please feel free to

e-mail either one of us.

We wanted to let you know that the next webinar Kim and I will be projecting in conjunction with United Spinal will be held on March 16. Incontinence is not an option. Talking about bladder management and please stay tuned and register for that. With that, that concludes our webinar presentation. We would like to hand it over to Bill to give us some time to answer a few questions that might be out there.

>> Bill: Hello, Kim and Jen. Thank you for that very detailed presentation. We will anticipate getting that archived for access to all of those programs all in one place, a great compilation. I want to get right to the questions because we have a number of them. The first couple -- why don't I combine them because essentially they are requests for information about exercises for quadriplegics -- a home base of exercises for quadraplegics and a little bit more specifically for higher level individuals at the seed 4 level. What would your suggestions be?

>> Kim: I will answer part of that. On the website and the PAD website there are resources that have adaptations for quadriplegics to use and do home-based exercises. And then for those with higher level injury, C4, for example -- and, Jen, you may want to pitch in a little bit. My recommendation is to try to go towards FES or NMES.

>> Jen: Absolutely. For those of you with higher level injuries, there are quite a few exercises that we mentioned. You have the movement system for upper extremity which helps to keep that range of motion for the extremity for you. And actually those systems because it will sense the sensors are so sensitive they can sense just the slightest movement and be able to get you the full range of motion. Functional electrical stimulation is a great option for the higher level injuries to be able to keep a fit and also to keep up your circulation and combat some of those secondary injuries, even some of the NMES systems of the little handheld systems there is also for FES cycling some of the companies offer upper extremity options so you can use surface electrodes and have your arms into the system to be able to use the FES for cycling. That is another big option for you.

The other thing I need to stress for the higher level injuries is to look at breathing exercises because your lung capacities is really important. So making sure that you do breathing exercises as well for the higher level injuries.

>> Bill: Thank you, Kim and Jen for those reflexions. I have a wide variety of questions. Let's keep going with them. Taking us back to the app that you reviewed, do you know of any apps in addition to



tracking exercise can also track a number of -- the number of falls that one might have?

>> Jen: That is an interesting question. I did not come across in researching this for this webinar. I did not come across any apps that record falls. If there is anyone out there in the audience if they're aware of one we would love to have you put it into the chat window or into the question so we can learn about that resource and be able to spread the word about it. Kim, do you know of anyone?

>> Kim: No, I don't. I'm sure there has got to be something out there because there are a lot of people that are looking at falls and monitoring that in the community. So, yes, as Jen mentioned, if there is someone out there in the audience that does know about that, please let us know about that.

>> Bill: I'll be monitoring the lower level of the -- the lower portion of the window screen because we have a lot of questions so we'll get to that as we're able to get any answers from the audience. How expensive are some of these monitors that you addressed?

>> Jen: The monitoring systems. So the fit bit and fuel band are available, you know, on the web for a variety of prices. Usually you can get some of them for below \$100. But again, they're ones that are not really fit for people who are wheelchair users. The ones that we provided today are not available on the market as of yet. So they don't really have a price attachment to them. So unfortunately they're not available yet but we wanted to make you aware of what is being developed and if you're interested to track it to go to those research institutions, The University of Alabama -- Birmingham and The University of Pittsburgh. So in the meantime, until we can get a really good device that is on the market for wheelchair users there are some of the apps that we saw that we recommend that you use in the meantime.

>> Bill: Okay. Are there any monitors for folks using power chairs?

>> Jen: Actually, the one that we presented for the -- from The University of Alabama, it could be used for people that are power chair users as well as manual wheelchair users. The picture just showed a manual wheelchair but actually it can be used for power chair wheelchairs, if you saw the monitor it is actually put around your upper chest so it is monitoring things like breathing and heart rate and circulation and those types of things. That is looking at your activity.

So even though you might be a power chair user if you're using your upper body it will be able to monitor that. That is one that is

particularly useful for those that are --

>> Bill: That is a solution. Thank you for sharing that. Are there technological devices covered by certain insurances i.e. Medicare or Medicaid or private insurance that you're experience level with any of these technological devices that you have addressed being covered by Medicare or Medicaid at this time?

>> Jen: Sure. FES cycling systems. I'll start with that. A lot of them can be covered by insurance. Again, the company that sell these a lot of them have reimbursement departments and they will help you to work with your insurance company to get reimbursement. Now, because Medicare and Medicaid is by state it depend on where you live. So they can help you out with that. For the -- for the NMES systems, those are -- can be reimbursed and probably more so. They're smaller devices. They're used much more freakily. So again that is one where you can really get a high probability of being reimbursed.

For exoskeletons, they are -- if you're a veteran, some of them are being provided through the VA system and I know just recently I believe it was rewalk was recognized by the VA system to be reimbursed throughout the entire VA system as well as the upper extremity ones. Again, those are going to have to go through the companies. A lot of them have reimbursement professionals that can help you. Unfortunately, depending on private insurance and Medicare and Medicaid it is all by state. So it really depend on what state you live in and again I would contact the companies and tell them that you're looking at purchasing it but you want to be reimbursed with your insurance and you can work with them from there --

>> Bill: Thank you. Would it be fair -- this is my own question, Jen. Would it be fair or is it sound advice to contact the manufacturer directly because it is in the interest of the manufacturer to know how things are covered and how they're paid for? So instead of going it alone, contact the manufacturer to see if they have guidance for getting it covered by insurance?

>> Jen: That would be a good recommendation. However, what I would recommend even prior to that is to be able to talk to your Health Care Professional. Whoever that might be, whether you have a physical therapist or you have a primary care physician and to talk to them about what your intent is for exercise and what you're looking into to make sure that before you go and contact the manufacturers that your medical professional is on your side and with you in terms of what type of exercise would be most appropriate for your health condition. Because

for some people some of these technologies might not be appropriate. So it is best to get the recommendation from your Health Care Professional and take that recommendation to the manufacturers.

But I always recommend this will is to take these resources and that is why we always provide the handouts in PDF is to take the resources with you when you go to talk tour medical professional because a lot of this technology is moving so fast. A lot of these medical professionals they were not around when they went through medical school or maybe they didn't take the course and CEU so make sure you bring that resource with you.

>> Bill: Understood. Let me make an apology to the entire audience which is a very large audience today. We have many, many questions. And unfortunately only a few moments later. Please do reach out to and while it is on the screen take down the information to get ahold of Jen French or Kim Anderson-Erisman by contacting them at their e-mail address and, again, if you don't have the ability to gather this information in just right now, the entire presentation will be archived within about a week on [www.spinalcord.org](http://www.spinalcord.org). Go to the webinars tab for the archived version. But we won't be able to get into the numerous questions that we have today. Let me get another before the end of the hour.

To lose weight, diet and exercise are needed. What guidelines are available for the number of calories to eat per day and guidelines on what exercise is the focus on to have the most success

>> Kim: I can give you a little bit on spinal cord injury. There is a study going on now to develop guidelines regarding calorie intake because there aren't anything -- there is not existing guidelines right now. But in general, some of the recommendations for spinal cord injury is to have a lower calorie intake than nondisabled age and gender matched individual. So somewhere -- depending on, you know, how much you weigh and how tall you are. For spinal cord injury somewhere around 1200-calories to maybe 1800-calories is much lower than what is generally recommended. But, also, in regards to exercise and activity there are guidelines out there for that for spinal cord injury and you want to -- it is kind of similar to the general population, exercises that you can actually do. About 30 to 45 minutes of moderate activity. Three to five times a week. But then if you want to lose weight, you'll need to do a little more than that. That is where maintaining weight.

>> Bill: An audience member contributed what we were looking for. The question earlier was an app to monitor falls. A viewer

recommends quiet comfort. Quiet comfort. It is an app or device for monitoring aging, independent parents, chair or non-chair users for adult children and for adult children. To monitor their aging parents in their homes and to tell an individual about a fall much more if a fall does occur. Quiet comfort is a suggestion.

>> Jen: Excellent. Thank you.

>> Bill: Thank you for thinking about reaching out to the audience. More heads in the game. Well that, pretty much brings us to the end of our available time. On behalf of United Spinal Association, I would like to thank miss Jen French and Dr. Kim Anderson-Erisman so much for sharing their personal experience and professional knowledge with us today on nutrition and exercise tips for wheelchair users there is a wealth of information that they have put together. And give us about a week to get it archived at [www.spinalcord.org](http://www.spinalcord.org) web. In other words, it is one of the menu tabs to find the upcoming and archived presentations.

Our next webinar will be five secrets to pleasure and connectiveness on February 3rd from 3:00 to 4:00 presented by Dr. Mitchell Pepper and Miss Lydia Angrade. Then we'll have Jen and Kim once more presenting incontinence is not an option on March 16th from 3:00 to 4:00 p.m. Eastern Time. Sign up for and receive our newsletter. Visit us at [www.spinalcord.org](http://www.spinalcord.org). Check out our magazine which covers everything active wheelchair users need to know and visit [new.mobility.com](http://new.mobility.com) to see what we're all about. Thank you, Jen and Kim, for your very detailed presentation.

>> Kim: Thank you very much.

>> Jen: Thank you all for coming.

>> Bill: And this will end today's presentation and look for webinars upcoming and archived at [www.spinalcord.org](http://www.spinalcord.org). Thank you very much.

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