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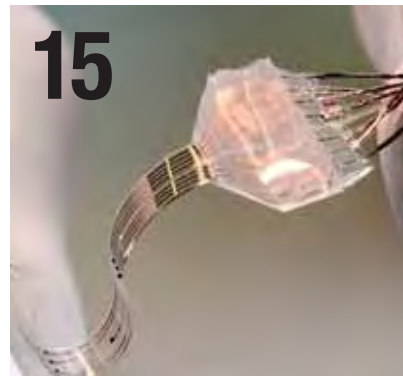
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When jobs are not enough...

Is employment what people with SCI really need?

It seems the sole focus of any government-led disability strategy is to place people with disabilities in jobs. There is shortsightedness in this approach. As I see it, a more long-sighted and further reaching strategy must be implemented to make sure that people with disabilities have an equal opportunity to gain employment. This involves much more than job placement.

On the whole, employment is a good thing. It gives people purpose, it contributes to our economy, and it puts money in people's bank account—if they're paid enough, that is. The problem with government's narrow focus on job placement is that it doesn't do nearly enough to support everything that is required for many people to even contemplate working. Finding employment is challenging enough these days, but for people with disabilities, there are a myriad of additional challenges. Without addressing them, jumping to the end goal of employment will not significantly alter the historically and unacceptably low employment rate amongst people with disabilities (in 2011, the employment rate of adult Canadians with disabilities was 49% compared with 79% for Canadians without a disability, and the number for those with SCI is even lower).

I believe that the role of government is to provide equal opportunities for all Canadians to succeed. For people with disabilities, this doesn't mean employment is a right, but having an equal opportunity to compete for jobs and succeed in them is. When it comes to SCI and other physical disabilities, there is a lot government can do to help even the playing field.

To start, sufficient supports for all aspects of daily living must be in place. It's pretty hard to contemplate employment when you can't find suitable accessible housing; lack assistance to get dressed, clean your home, or prepare meals; don't have options for accessible transportation to get to work; lack access to technology and equipment supports that allow you to look for a job, let alone work in one; or can't successfully recover from secondary health issues like depression, pressure sores, fatigue, UTIs, bowel dysfunction, and pain (because they're not adequately treated, and equipment to help mitigate them is not adequately covered by public health funding).

What's more, employers must be informed about how to provide working environments and cultures that successfully include people with disabilities as valued employees—and the benefits that disabled employees bring to the workplace. There is also a critical role for SCI BC and our partner organizations to play in helping people with disabilities prepare for and maintain employment.

To focus primarily on programs aimed at placing people with disabilities in jobs will not change the low employment rate that has remained unchanged for decades. What is needed is a new approach that starts with addressing all of the upstream barriers and challenges to employment people with disabilities face. To be fair, the Province of BC addresses this in their Accessibility 2024 plan to make BC the best place in Canada for people with disabilities to live.

To work, this will take money, information and motivation. It will also take time. However, the payoff will be a societal change that will provide people with disabilities a more equal opportunity to achieve meaningful employment, and finally shift the employment numbers in a positive direction. With a bigger investment will come an actual reward for all of us.

- Chris McBride, Executive Director, SCI BC



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Executive Editor..... Chris McBride
Managing Editor Cliff Bridges
Assistant Editor Maya Pankalla
Design Cliff Bridges
ContributorsMaureen Brownlee

SUBSCRIPTIONS

Free subscriptions are available for BC residents and health professionals:
T: 604.324.3611 TF: 1.877.324.3611 E: thespin@sci-bc.ca

ADVERTISING

Advertising rates and a publishing calendar for *The Spin* are available online at www.sci-bc.ca or by contacting Kirsten Sharp E: ksharp@sci-bc.ca T: 604.326.1259

SUBMISSIONS

Submissions, suggestions and comments are greatly appreciated—please email these to thespin@sci-bc.ca or send by regular mail to:

Assistant Editor, *The Spin*
Spinal Cord Injury BC, 780 SW Marine Drive
Vancouver, British Columbia V6P 5Y7

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Spinal Cord Injury BC, 780 SW Marine Drive
Vancouver, British Columbia V6P 5Y7 T: 604.324.3611

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SCI BC HEAD OFFICE

780 SW Marine Drive, Vancouver, British Columbia V6P 5Y7
T: 604.324.3611 TF: 1.877.324.3611 F: 604.326.1229
E: info@sci-bc.ca

REGIONAL PEER CONTACTS

Chilliwack: Pete Froese, Peer Program Coordinator
E: pfroese@sci-bc.ca

Fort St. John: Lori Slater, Peer Program Coordinator
T: 250.787.1912 E: peervolunteersj@sci-bc.ca

Nanaimo: Bert Abbott, Peer Program Coordinator
T: 250.616.1186 E: babbott@sci-bc.ca

Prince George: Brandy Stiles, Peer Program Coordinator
T: 250.563.6942 E: bstiles@sci-bc.ca

Quesnel: Alison Duddy, Peer Program Coordinator
E: peervolunteerq@sci-bc.ca

Vancouver: Brad Jacobsen, Peer Program Coordinator
T: 604.326.1236 E: bjacobsen@sci-bc.ca
Richard Peter, Peer Program Coordinator
T: 604.326.1230 E: rpeter@sci-bc.ca

Vernon: Sonja Gaudet, Peer Program Coordinator
E: sgaudet@sci-bc.ca

Victoria: Scott Heron, Peer Support Specialist
T: 250.812.0773 E: sheron@sci-bc.ca

Williams Lake: Sandra Stuart, Peer Program Coordinator
peervolunteerwl@sci-bc.ca

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ADAPTATIONS *for*
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Feel the love.

Explore and strengthen your relationships, from the chat room to the bedroom! Get confident, healthy and sexy at our annual Spinal Cord Injury BC Forum on April 18 (10:30 am to 4 pm) at Vancouver's Blusson Spinal Cord Centre (ICORD). This year's hot topic is the titillating, tricky, and often taboo field of relationships. Join peers, speakers and industry in a discussion on sexual and emotional health. Learn the benefits of surrogacy, how to set up an online dating profile, all about fertility, and more. Contact Alfiya by email at abattalova@sci-bc.ca for info or head to www.sci-bc.ca and check out our events calendar.



Join the Dream Team.

Think you've got what it takes? Challenge yourself, make new friends, and wheel, walk or run along Vancouver's beautiful seawall at this year's Scotiabank Charity Challenge. On June 28, our SCI BC team, the Walk 'n' Rollers, will race five kilometres in an effort to raise awareness for SCI and funds for SCI BC's information and peer support services. We're looking to blow last year's 40 team members, and the \$37,500 we raised, out of the park! Sign up alone, or with family and friends, and start training—and fundraising. For more details or to sign up, visit www.sci-bc.ca/events/scotiabank-5k, or email ksharp@sci-bc.ca.



Find your super power.

Explore your story through theatre, music, and dance. Take centre stage, among friends, in Realwheels Theatre's current "Wheel Voices" community project: Super Voices! Each Wheel Voices workshop series nurtures emerging creative talent in the disability community. Improve your communication skills, interact with like-minded peers, and develop your craft with help from the pros. No experience necessary. The next workshop begins on Saturday, March 28th. With production slated for June 2015, spots in this workshop are filling up fast. Head to www.realwheels.ca or email info@realwheels.ca to learn more.

Welcoming New Roommates

The close confines of SCI BC's main office in Vancouver just got a little cozier.

In February, SCI BC welcomed provincial sports agency SportAbility and Athletics Canada to our shared space within the building. They join existing roommates BC Wheelchair Sports, BC Wheelchair Basketball, BC Adaptive Snowsports, Canadian Wheelchair Sports and Realwheels theatre company.

Although new to the building, SportAbility has been providing services for almost forty years. As a provincial sport agency and registered charity, the organization provides physical activity programs at all levels for individuals with a disability throughout our province.



SportAbility currently offer programs in four sports, including sledge hockey, boccia, power soccer, and 7 A-Side at both recreational and competitive levels.

Executive director Ross MacDonald is excited about the move. "SCI BC's building has become a hub for disability services," he says. "Being in the building will open up many new opportunities to share resources, connect our members to each other's services and to develop new partnerships."

Next door to SportAbility you will find Athletics Canada, which has set up an office for their regional recruiting activities.

You can learn more about SportAbility by visiting their website at www.sportabilitybc.ca.

For more information on Athletics Canada, check out www.athletics.ca.



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A man with a beard and long hair, wearing a blue sweatshirt and jeans, is sitting in a black wheelchair. He is positioned next to a white pickup truck with its driver-side door open. The truck has "350" and "DIESEL V8" badges. The background shows a snowy hillside and trees. The man is smiling at the camera.

Back in the Hunt

This fall, 27 years after a motor vehicle accident left him with complete quadriplegia, Reg Swanson hopes to get back in the bush and bring down some big game.



Reg Swanson grew up in the backcountry around Prince George, with hunting and fishing a central part of life.

"I spent a lot of time outdoors," says Swanson, now 45. "I started hunting with my father. I got my own hunting license for the first time when I was ten. Since childhood, it was a part of me. Then I had my accident in 1988, and I just didn't know how I would do it again."

Which is perfectly understandable—Swanson's injury, C4-C5 complete, left him scrambling to simply figure out how to get through a day with some kind of independence. The level and completeness of his injury meant his new reality was daily attendant care, sip and puff controls, and learning how to avoid a litany of secondary health complications.

Nevertheless, his love of the outdoors lay dormant. Sixteen years ago, he moved from Prince George to the tiny North Okanagan town of Falkland, midway between Vernon and Kamloops. His father was living and working there, and together they designed and built a modest, fully accessible bungalow for Swanson. And as he settled into rural life, he began to take notice of the incredible wilderness opportunities that surrounded him.

"I began thinking about hunting a lot—especially when I would talk to friends who were out there and sharing their hunting stories," he says. "Then, about ten to twelve years ago, a friend of mine came down from Prince George, and with my van, we did our best to get up some backcountry roads."

That experience turned into a regular event in subsequent hunting seasons. He'd accompany friends and family where possible. Soon he began to wonder how he could take a more active role—perhaps getting his own hunting license and having one of his friends assist him, or "hunt by proxy" for him—in other words, shoot, kill and dress an animal for him, under his supervision.

But he admits the hurdles were daunting. "I was busy doing other things, and I didn't think that I would ever be able to have a vehicle that would take me out into the backcountry safely. And then I learned later on that there's actually a law in BC that says you're not allowed to shoot for somebody else, or cut their tag."

Swanson, however, had learned to live a full life with a high level SCI, so he wasn't about to

back away from a fresh set of challenges. First, he set out to convince authorities to change the law that prevented him from having someone legally hunt for him. In 2008, he made his first call to the Fish and Wildlife Branch of BC's Ministry of Forests, Land and Natural Resource Operations. Armed with the knowledge that hunting by proxy, or assistive hunting, was legally sanctioned in other jurisdictions such as Alaska, he made his case with Fish and Wildlife officials.

Today, six and a half years later, his tenacity is finally about to pay off. At the time of writing, it appeared highly likely that BC's hunting regulations would be officially changed on April 1 to allow a qualifying person with a disability to apply for a "hunting by proxy" license. The license will require that applicants designate two people per hunting year to legally assist them. Obviously, the two people designated also need to hold a valid provincial hunting license, and both disabled hunters and their designated assistants need to pass the Canadian Firearms Safety Course and successfully apply for a Possession and Acquisition Licence.

As for why it took almost seven years, Swanson says there are multiple reasons—for example, he needed to provide multiple letters of support for his quest from credible individuals and organizations (SCI BC was among those that provided a letter of support). But the main reason was simply that the gears of government bureaucracy turn slowly, and it didn't help when key staff initially involved in his quest left the Branch without passing on the file to anyone else.

Regardless of the delay, Swanson is grateful to the government for finally getting it right. And during the delay, Swanson kept busy, working on finding a vehicle that would take him deep into the backcountry.

"I wanted a truck for two reasons," explains Swanson. "One, just to be able to go up to the lakes, up steep hills, and, with the four-wheel-drive to hold me back, down the hills. And it was dual purpose, especially going up hunting and going into the backcountry where you really don't want anyone else around. It can't happen with a van—at least not very easily. I was also doing log brokering and helping my father purchase birch logs for making lumber and firewood, and that gave us a kind of push to get the truck idea going as well."



READY FOR THE BACKCOUNTRY: The lift built by Swanson's father is truly a feat of DIY engineering. Swanson first wheels backwards into the lift as it rests on the ground (left). He's then lifted vertically (top right), and then moved horizontally into the cab of his Ford F350 4x4.

Initially, Swanson looked around for a company that would do the type of modification he was seeking—namely, install a lift in the passenger side of his Ford F350 diesel 4x4. But he couldn't find what he was looking for, and he came to the conclusion that he would need a custom-made solution. Fortunately, his father, Andy, was willing to help.

"Looking on the internet, I saw a couple of different ideas," Swanson says. "My father, being quite handy when it comes to designing, constructing and having the foresight to create something by visually just looking at, built it all himself in our shop. It was quite a feat."

When you see the finished product up close and in action, you realize what an understatement that is. "Because I'm so tall—54 inches from the floor to the top of my head when I'm in my wheel-

chair—we had to start by dropping the frame seven inches on the passenger side, then lower the floor right down to the frame, which was quite a process," says Swanson.

Since the modifications were being done on a used vehicle, there was no requirement to get Transport Canada's blessing. Nevertheless, Swanson did get the frame modifications safety certified.

With the frame lowered, Swanson's father then fabricated and welded the entire lift. It's flawlessly and smoothly powered by hydraulics, using electric motors for the pumps. The lift first extends out horizontally, and then drops to ground level. Once he's wheeled in backwards, Swanson and his chair are lifted effortlessly and precisely back into the passenger side of his truck.

The truck was finished three years

ago, and Swanson has since put it through its paces, exploring for the first time in 16 years the beautiful and rugged backcountry that surrounds him.

And so this autumn, if everything goes well, he'll be seeking to bag his own deer or moose for the first time in almost three decades.

"This is an excellent hunting area—you just have to put your time in," he says. "There are lots of roads up top on the mountains, and I can get out of the truck and sit out, overlooking a clearing—sometimes animals will come to you. I'm also looking forward to hopefully putting in a draw for the Prince George area and going up there and hunting with some friends."

He's clearly anticipating the arrival of hunting season. "I think it's partially the thrill of the chase of the animal, and part-

ly the satisfaction of bringing the meat home. And there's lots of social time with hunting, whether it's going and getting ammunition, or checking out a different gun, or sighting it in—all those things that actually lead up to going out and trying to find a deer or a moose or whatever you're allowed to shoot."

Swanson is pleased that he will soon be able to legally hunt with his designated assistants. But he's already dreaming about greater independence as a hunter, and a good friend who is a marine engineer has been hard at work making that dream become reality.

"We're actually in the process of developing a chair-mounted rifle with a sip and puff control to activate the trigger," says Swanson. "It will be mounted on a turret so that you'll be able to aim 45 degrees in either direction, and 45 degrees up and down, in order to sight-in, for now, at a firing range. This will let us see if it's feasible and how quickly it can respond."

The parts, including some sophisticated electronic controls, have all been built, and it's just a matter of putting it all together and testing the concept. As for legalities, Swanson has been given the green light by firearms authorities.

Swanson is understandably proud of his accomplishments—singlehandedly mounting a campaign to change BC's hunting laws, creating with his father's invaluable assistance a unique accessible vehicle to get him into the backcountry, and working with his friend to develop what could be the world's first sip and puff controlled rifle. Now he wants to ensure others can benefit.

"The biggest reason that I wanted to share this story," he says, "is so that I can create the awareness out there for people who were avid hunters and outdoors people before SCI, and make sure they're aware that something like this is available to everyone who can't shoot for themselves."

Swanson is willing to provide advice to any other would-be hunters with high level SCI—please send us an email at thespin@sci-bc.ca if you'd like to reach him, and we'll put you in touch. ■

Accessible BC: The Waterfall Capital of the North

If poor currency exchange rates are convincing you to stay close to home this summer, consider a trip to Tumbler Ridge and nearby Monkman Provincial Park.

Set in the rolling foothills of the Rocky Mountains near the confluence of the Murray and Wolverine Rivers in northeastern BC, Tumbler Ridge is known to some as The Waterfall Capital of the North because of the large number of stunning cascades that tourists can view in the area.

The nearby sights are breathtaking—towering peaks, glaciers, alpine meadows blanketed with wildflowers, and crystal clear lakes abound. But the highlight for many who visit this area is Kinuseo Falls in Monkman Provincial Park. Getting there is a bit of a grind—it's located at the end of a 51-kilometre gravel road. But if you make the trek, you'll be rewarded by the site of the frothy waters of the Murray River plunging 60 metres—higher than the renowned Niagara Falls. Best of all, there's a perfect wheelchair accessible path that leads from the parking lot to a viewing platform located at the base of the falls, putting you right at the brink of this incredible display of nature's raw power and beauty.

Tumbler Ridge is a relatively new community—it was built in the 80s for employees in the region's flourishing coal mining industry. There are several accommodation choices ranging from B&Bs to campsites and hotels, but we think the Wilderness Lodge Tumbler Ridge might be just the ticket for our readers. It features 50 one and two-bedroom suites, and two of the one-bedroom suites have excellent wheelchair accessible features, including free space around the bed, and barrier free bathrooms that include wheel-in showers. You can find out more at www.wildernesslodgetumbleridge.com.

Tumbler Ridge is about 1,200 kilometres north of Vancouver. Check out the town's tourism website at www.visittumbleridge.ca for more information.



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e-Dura

With the introduction of a revolutionary spinal implant that mimics the body's flexibility, reality is quickly catching up to Hollywood

In the past few issues of *The Spin*, we've told you about breakthrough research that's demonstrated the power of electrical stimulation as a way of restoring function and sensation in people with SCI.

In the Summer 2014 issue, we brought you the story of four young American men with SCI who received an implant in their spinal cords as part of a project at the University of Louisville in Kentucky. Using a combination of stimuli and physical training, all four subsequently achieved some restoration of lower extremity sensation and function, as well as measurable improvements in a number of key secondary areas—autonomic function, blood pressure regulation, bowel function, sexual function, and bladder function. And in the last issue, we told you about related work taking place at UCLA, where researchers used electrical stimuli to restore bladder control in rats with SCI.

It's exciting work, but the researchers involved in both projects have spoken about the need to develop a spinal implant that's better than the commercially-available, out-of-the-box implants that they've been using up to this point. The implants are central to the research—after be-

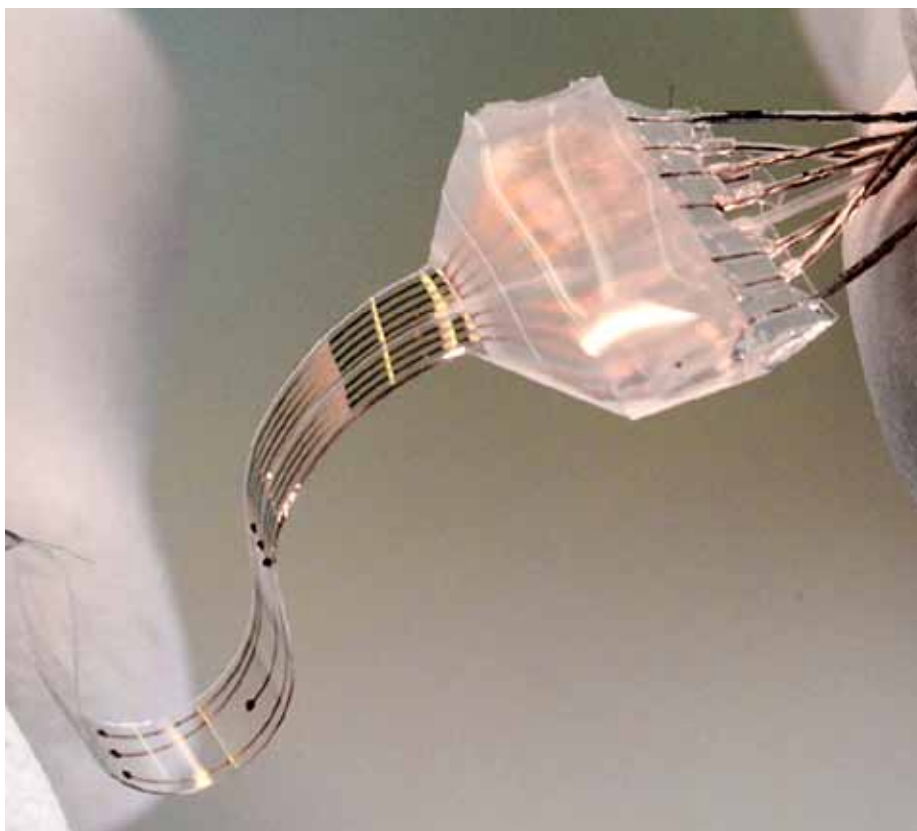
ing surgically installed, they transmit the electrical pulses which appear to “wake up” the spinal cord.

Now, researchers at the École polytechnique fédérale de Lausanne (EPFL) in Switzerland appear to have done just that—they've developed a flexible implant designed to integrate and move with a person's spine, minimizing the risk of friction, inflammation and rejection that are drawbacks to the rigid implants currently in use.

The breakthrough device has been dubbed e-Dura. It's designed to be implanted directly onto the brain or spinal cord, underneath the dura mater—the membrane that protects the brain and spinal cord. The key features of e-Dura are flexibility and stretchiness, which are almost identical to that of the living tissue it's implanted in. This vastly reduces the risk of inflammation, friction and abrasion.

E-Dura is the result of a collaboration between two teams at EPFL—one led by Dr. Stéphanie Lacour, a professor and Bertarelli Foundation Chair in Neuroprosthetic Technology at EPFL's School of Engineering, and the other led by Dr. Grégoire Courtine, professor and International Paraplegic Foundation Chair in Spinal Cord Repair.

“Both of our teams joined EPFL about three or four



years ago,” says Lacour. “Gregoire’s expertise is in spinal cord repair, mine in soft bioelectronics. It was quickly very clear we had to work together and develop new solutions for an implantable neuroprosthesis.”

Their solution is e-Dura—the first implant that is entirely made of elastic materials and has the ability to, over time, biointegrate at the surface of the central nervous system.

“Traditional implants use electrodes and wires embedded in silicone,” explains Lacour. “The wire and electrode pads are rigid. E-Dura wires are made of stretchable thin gold films, and the electrodes are coated with a new silicone-platinum composite that can bend with the body. Furthermore, we use techniques borrowed from the microelectromechanical systems and microelectronics industry to fabricate e-Dura. Therefore, we can ‘batch’ fabricate implants.”

E-Dura is the result of a collaboration between Dr. Stéphanie Lacour (left) and Dr. Grégoire Courtine, along with their respective laboratory teams.

Lacour and Courtine have extensively tested the implant in rats with SCI and found that, even after two months, there was no tissue damage or rejection (they also were able to restore some walking function in the rats, but that’s another story). They believe the implant could last up to a decade in humans before it would need to be replaced.

“Our e-Dura implant can remain for a long period of time on the spinal cord or the cortex, precisely because it has the same mechanical properties as the dura matter itself,” says Lacour. “This opens up new therapeutic possibilities for patients suffering from neurological trauma or disorders, particularly individuals who have become paralysed following SCI.”

Lacour says they will move to clinical trials in humans as soon as possible, but she concedes there are still hurdles to cross before that becomes a reality.

“We hope in the future to translate our e-Dura technology for clinical applications,” she says. “This will require many steps, including validation of the new materials to ensure they comply with FDA regulations, and also the development of a complete neuroprosthetic system including implantable electronics, battery and implants, and complementary rehabilitation methods. I can’t give a timing on this, but we are working towards this.”

In particular, says Lacour, the ultimate goal is to develop a wireless system that would be easily and safely used by potential recipients. “A system where there are no transcutaneous wires is a must-have for long-term studies and clinical systems. The general scheme would be similar to what is done today for a pacemaker or a deep brain stimulator (DBS).”

E-Dura has been viewed with interest by other members of the SCI scientific community—and many have said they believe it has a great deal of promise. One of those is Dr. Reggie Edgerton, Director of the Neuromuscular Research Laboratory at UCLA, and the lead investigator of the project described on the previous page that successfully used electrical stimulation to restore bladder function in rats. “This work represents a significant advance in the development of biocompatible devices,” Edgerton recently told *Scientific American*.

Lacour and Courtine’s work with e-Dura was recently published in the January 9 issue of the journal *Science*. ■



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Turned Online

Love it or hate it, online dating is here to stay. We asked some of our Peers to relate their experiences looking for romance in cyberspace.

Matchmaker, matchmaker, make me a match. Or twenty of them. And make it fast. These days it's as much about who we woo, as how we do it. In dating, we're rapidly moving towards a world where people no longer distinguish between online and offline.

Today, an estimated 30 to 40 million North Americans use one of 1,500 Internet dating platforms. Site options and pricing vary: dive into an open pool of profiles, or narrow your search by age, ethnicity, sexual orientation, disability, and personality match; sign up for free or dish out upwards of 60 dollars a month.

Tinder, the "swipe left for no, swipe right for yes" mobile app, has 24 million users in just its third year. Vancouver-

based Plenty of Fish, a free global dating site, boasts over 90 million members. And on the opposite end of the pricing spectrum, paid site eHarmony still had 762,000 as of last year.

Turns out that, when it comes to putting a price on love, a few of us are still willing to open up our wallets. Not surprisingly, the web matchmaking industry is worth over \$1.5 billion.

These days, a quarter of Canadians admit to having tried online dating, and 16 per cent have even taken those relationships from the chat room to the bedroom. People can meet, date and start the rest of their lives together with a fated swipe, tap or click. But for online daters with disabilities, the process of finding love virtually presents its own unique

challenges: choosing between disabled and non-disabled sites, spotting online deception, and navigating the when-to-reveal-my-disability conundrum. Just setting up an eye-catching profile can take a degree in public relations.

When it comes to dating with a disability, there are plenty of questions, and few set answers. That's why this year's Spinal Cord Injury BC Forum is all about Relationships, spotlighting everything from sexual surrogacy to health and fertility to, yes, online dating. In anticipation of the April 18 event, slated for 10:30 am to 4:00 pm at the Blusson Spinal Cord Centre, we asked a cross-section of male and female Peers to weigh in on the tricks, trials, and triumphs of looking for love online.

Kristina Shelden, 30: "Interview-style questions make me feel awkward and uncomfortable."



Online dating. Whew... that's a subject. One that comes up a lot over wine and lady-driven chatter. Sure, I've tried online dating, but I'm not a fan of it.

So, I start off scrolling through the pictures. I giggle to myself because I feel like I'm online shopping for men. Scroll, scroll,

scroll. 'Oh! He's cute! I might try him on!'

Okay, but what about my own profile? What do I say about myself? 'I'm an ambulatory quad...' No, that won't do. I don't want it to be the thing that defines me. Besides, how easy is it to judge a book by its cover? I already did it myself just ten seconds ago. (That guy likes rap? Heck, no. He's not for me.)

Okay, how about, 'I try to keep active, but an injury keeps me away from a lot of sports.' Hmm...technically a lie. There are a ton of adaptive sports. What about, "Let's just skip to the getting coffee part, shall we? It's the only way to really get a taste of each other." Hmm... kinda flirtatiously witty, yes?

I've sporadically tried online dating for a few years now. But I find it difficult to make a real connection through text-based messaging, and for some reason I find it even more difficult to make the leap from on-screen to in-person. Even though I want to go straight to the coffee date, getting there is tough—so much time passes in what I feel is inadequate communication.

By the time we commit to meeting, it doesn't feel natural to me. I feel like we both know we're there to check out if this person in front of us has the potential to be our new mate, even if we try to cover it with nervous and often unsuccessful attempts at wit and flirtation. I suppose that's dating in general, but because we've found each other specifically on a dating site, it seems to strip-down the experience, at least for me. Interview-style questions are not the way to my love—they just make me awkward and uncomfortable.

Then there's how disability plays into the scenario. How much do I say prior to meeting? How much do I say when we meet? I've found it's impossible to know what's best. And I've had girlfriends with disabilities say the same thing.

Some men are afraid of disability. It seems "too big" for them. Others become a little too fixated on it: "Oh, wow. You're absolutely amazing! Look what you've been through!" Nothing like being perched uncomfortably up on a decorated pedestal.

Throw in the challenge of figuring out that perfectly witty first message—cue the Joey Tribbiani "Hey... how you doin'?"—and the whole situation reeks of awkwardness.

On top of that, I've found a profile can completely misrepresent someone. I met a guy once at a bar and really hit it off with him. It turned out he had a girlfriend, so that fizzled out pretty

quickly. But a few months later—and I hope after he finished things with his girlfriend—I saw his profile pop up. Curious, I checked it out, and laughed—had I seen it first, I would never have considered spending any time with him.

In my experience, the thing that really drives genuine first attraction is in the nuances of physical conversation. The way the sounds tumble from a man's mouth, the way his lip quirks into a smile, the tenor of his voice and the crinkle of his eyes shining with laughter. That's what gets me. I've yet to have a natural conversation develop from an online experience.

Loneliness and curiosity may periodically drive me to visit the online fishbowl now and again, but so far I still haven't found someone that actually connects with me. Despite the direct proof that it can work—one of my best friends found her husband in that same fishbowl—I fear online dating is a lost cause for me. I guess I'm old-fashioned that way.

Brad Skeats, 41: "Be honest, be yourself, and have fun—in that order."

So, you're thinking of jumping into the world of online dating? Oh, where to begin...

Today there are so many sites that it can be overwhelming trying to decide where to start. I've always preferred the paid membership sites—specifically



eHarmony and Match. I've found that, in contrast to some free sites like Plenty of Fish, people I've been matched with on these paid sites are a little more serious about meeting a potential partner. Which site you decide to try will ultimately come down to how serious you are about meeting a partner, how much time you're willing to commit to filling out a profile, and what you can afford.

Unfortunately, with online dating, as is often the case with social media, people sometimes enjoy taking liberties and feel the need to stretch the truth. I'm not saying that everyone does, and in my experience within the sometimes crazy, sometimes wonderful world of online dating, I've seen both—the good and the bad. (Even some ugly, truth be told.) That being said, I've been introduced to some truly wonderful people online, even some "willing to take a chance on a guy in a chair."

While everyone living with a disability will employ their own approach to disclosing their disability, and its various trials and tribulations, fun and frivolity, I've always chosen to adopt the full disclosure approach. From what I've been told, it's always been appreciated, and in the end I'd rather they have the knowledge up front, just as I would like to have. I've always been sure to include a photo of myself in my everyday wheelchair and as an athlete, in some kind of sport chair.

One of the important things to remember when delving into

the world of online dating as an individual living with a disability is that many of the people you meet may have little or no knowledge or experience with disability. With this in mind, I always try and make my date feel as comfortable as possible so they feel like they can ask about my life and experiences living with a spinal cord injury. It's not always easy to be inundated with so many questions date after date but it can lead to some amazing conversations and the opportunity for a closer and more open relationship moving forward. In the end, just be honest, be yourself, and have fun!

Danny Sloan, 43: "After two disasters, third time's a charm!"

At age 27, my disability introduced me to the world of computers. I had all this free time and got immersed in chat rooms. One attraction was that it was a safe way to socialize—I could enter a chat room, and nobody would know I had a condition.



I soon realized that not everybody was who they said they were. There was manipulation and toying with hopes. One woman was passing herself off as actress Katie Holmes—she turned out to be a 52-year-old cake decorator from the UK.

I've never lied; and although I didn't always disclose I had a disability right away, I would when it was necessary—usually early on. About 10 years ago, and four years post injury, I discovered some disabled dating websites. I also met people through Yahoo disability support groups and found out what devotees are. (I met a devotee from Australia, and it was really kind of odd—someone slavishly liking you for something you're kind of trying to bury.) I wavered between dating able-bodied people and dating someone with a disability.

My first trip to meet someone I met online was an absolute disaster. She was a California girl I met on a US-based disabled dating site. As my visit progressed, it became increasingly uncomfortable. I think we had gotten too close before we met, and since the expectations were high, it all fell apart.

The second trip, to England, was just as bad. This girl was intriguing, yet somewhat mysterious. When I arrived, I realized why—she hadn't disclosed she had a form of spinal collapse and her life expectancy was only about 40 years. If I had known about it, I might have accepted it. But being surprised with it? I discovered soon after that her life was actually quite chaotic. The first night we went out, her sisters got into a bar brawl—with a prostitute. Again, I moved on.

There's not a lot of traffic on disability online dating sites. You can make a profile and let it sit there, checking in once in a while. Because your condition is out in the open, you don't



have to worry about when and how to reveal it. (Often, on non-disabled dating sites, when my condition got disclosed—and if things were going well, you had to mention it or else you were leading people on—I would get shot down.

It hurt.)

I met my wife on a Russian disabled dating website. I was on three sites; the other two were in UK and the US (the disabled community is so much smaller, so you have to open that net wide). She approached me. When I checked her out, she didn't appear to have a disability. But I could tell that her photo wasn't professional, which can be a giveaway for dating cheats. I got the feeling that she wasn't out to deceive me and we immediately hit it off. It turned out she had alopecia—a protein deficiency causing her hair not to grow properly.

She was from Tunisia, and The Arab Spring had begun there a year earlier. She got tear-gassed; she grew up in a police state. I love politics and history, so we had lots to talk about.

Safety First...

"Chair Chaser", "Devotee" or just a plain "Creep"? Whatever you want to call them, be careful. We're sure some devotees have a harmless fetish, but in other instances the attraction to and sexualization of disability can range from unsettling to dangerous. The internet really is a web; it's easy to hide your identity behind a friendly photo and an online persona. People with disabilities can also be targeted by scammers offering up romantic words while seeking to part you from your cash. Stay safe and have fun!

- Trust your gut. Are they making you feel uncomfortable? Are they confessing their love too quickly, or pressuring you to leave the dating site and chat through private messaging? Remember, it's the internet—it isn't rude to be up front. Stand your ground, or simply don't respond. Be your own advocate.
- Ask questions. Do their photos look suspiciously professional? Googling "reverse image search" can show you how to check if their private photos exist elsewhere online. If you have their name, look them up on social media. Are they who they say they are? Some people are great at crafting personas and fake profiles on Facebook. Check your facts and tread lightly.
- Play it safe. If you decide you want to meet in person, do so in a public place, or with friends. Are things not going as you hoped? Pick up your phone and use the old standby: "What? There's a family emergency? OK...I'll be right there".
- Don't always judge a book by its cover. Though photos can be a telltale sign, they are often misleading. Unfortunately, capturing our multi-faceted selves in a short online profile isn't a perfect science. Allow for a slight margin of error.
- Have fun! In the end, you're going to go through a lot of people—devotees and scammers, or not. Don't just settle. Date a lot. Meet new people. And find someone that makes you feel as awesome as you are.

Eventually, I went over and met her in person. She turned out to be shy, beautiful, witty and moralistic. However, she had not dated a lot, and she took a risk in her culture by dating a non-Muslim. She rented an apartment for me and we spent a lot of time together. I stayed for several months, and she came more alive as I got to know her. She wasn't looking for a ticket out—that had been a concern, because I wanted it to be genuine.

We got married in Istanbul four months after meeting. A few months later I came home. My wife worked in Kuwait as she awaited immigration. We were apart a year before we reunited.

I'm not embarrassed to have met my wife online. That said, I think it's so much easier for someone with a disability to meet someone in person, if they decide to date in the able-bodied world. It's easier to explore differences in person. Online, there's too much choice, and it's too rapid. There are just too many people looking for something serious too quickly.

Dave Symington, 52: "Online dating is just not how my life works."

I think that, when I was younger, I was much more self-conscious about trying to look non-disabled. Over time, you gradually become more comfortable with who you are. Now I always tell people, "Well this is what happened to me, this is what I can do, this is what I can't." Maybe I come across as a little less sensitive, because I forget that some people don't have the experience with disability, especially on a date.



I do talk about my disability in an online dating sense for sure, and certainly in a sexual sense, if it goes that far. Sometimes, it just feels so natural and comfortable with somebody and it's a non-issue. Sometimes I think it's going to be an issue, and it's totally not (or vice versa). In one case, I got dumped when it became apparent I was never going to play handball. You get into a relationship, sometimes for years, until that stuff surfaces: "You mean, we're never going to ride horses on the beach together?" So the other person has a lot to adjust to as well.

I looked into online dating when I was in between relationships—I was curious. But I found that that's just not the way my life works. I created a profile, put it out there, and got messages from all over, including people in Texas. And I thought, "I don't want to do this. I'll go through all of this, and I still won't know

until I meet them what it feels like to be in their space. And then, from there, it's probably going to be another month, unless I'm really lucky, of figuring things out. And I'm certainly not going to move to Texas." It just didn't feel right to me, so I just sort of went back to meeting people out in the world.

That's the way things typically work for me. Plus, your priorities change. I guess being married at this point in my life isn't important to me; I doubt that I'll ever have my own kids. And I no longer look at relationships as a necessity for me to feel good about who I am. I think a lot of times I operated on this premise: "If I'm not having sex with somebody, if I'm not desired by somebody, then I'm worthless." When I was injured, that's all life was about. I was 19 years old—it was all physical, it was all sexual—and I think that sometimes, depending at what time of life you get injured, you can get stuck there.

Even though we've all had these experiences, sometimes there's a little shame about admitting that I have dated online. If I were still 20 today, I don't think it would make a difference. Online dating is a norm now, but I just can't bring myself to do it.

Teri Thorson, 42: "It's important to get yourself out there and practice dating."

I tried three different online dating sites—one free and two paid. On the free one, I wrote in my profile that I was in a wheelchair; for the paid ones I did not mention anything until some contact was made. I wanted to see if this would make any difference in the type of guy that was attracted to me. I chose the free site for full disclosure in my profile as I knew I would have to sort through a lot more profiles than on the paid ones, which make the matches for you based on personality questionnaires.



In the end, I did have to weed out a lot more profiles from the free site. But, I did go on more dates. All in all, it didn't seem to matter if my profile said that I was in a chair, or not. Both approaches provided me with the same match results—the same types of men interested in me.

Although none of these matches from online dating resulted in a relationship, I met some new, interesting and nice people. You just never know where you will find them—or what a random online message might bring. And I believe it's important to get yourself out there and practice dating so you're ready when you meet the right one for you.

Interestingly, I did meet my husband on a social media site. I had moved to Victoria and only knew a couple of people. I was looking to make some new connections, so I turned to Myspace—and that's how we met. We're no longer together, but our wonderful son turned five this year. ■

More on romance & relationships...

- Read more peer stories about online dating at www.sci-bc.ca.
- Would you display your wheelchair in your online dating profile? Would you date someone who uses a wheelchair, or do you prefer non-disabled partners? Take our relationship polls at www.sci-bc.ca/poll and see if others agree.

Rethinking Pain

New research from the University of Texas challenges our view of SCI neuropathic pain—and reveals a potential new target in our bodies for treating it.

It's true that we often write about pain research. But if you're one of the estimated 40 to 50 percent of all people with SCI who deal with the reality of neuropathic pain, you probably appreciate our fixation.

Meanwhile, if you're one of the fortunate ones living pain-free, try to imagine yourself dealing with often excruciating, unrelenting burning and stabbing sensations in parts of your body that you otherwise have no function or feeling in. Neuropathic pain is truly one of those secondary health complications of SCI that just seems to be so... well, unfair. And because it remains so mysterious despite our best research efforts to date, we're always quick to publicize new findings about it.

Which brings us to new findings from researchers at the University of Texas Health Science Center at Houston (UTHealth) that challenge our understanding of the mechanisms behind SCI neuropathic pain.

"The earlier assumption was that the pain came from electrical activity generated at the injury site in the spinal cord," says Dr. Edgar T. Walters, a professor in the Department of Integrative Biology and Pharmacology at

the UTHealth Medical School and the study's lead researcher. "However, after spinal cord injury, peripheral sensory neurons in many parts of the body act as if they sense the injury, and they appear to remain permanently activated—continually driving pain."

In a paper published in *The Journal of Neuroscience* last August, Walters and his colleagues described how they reached their conclusions by studying a rat model of SCI. The team was successful in identifying healthy, functioning nerve cells, or neurons, located far from the injury site, that were playing an important role in helping to maintain neuropathic pain. They were also successful in understanding how and why these neurons were doing this. And perhaps most importantly, they succeeded in selectively blocking the pain-causing activity in those neurons. The result was a measurable reduction in chronic pain.

Now we'll try to explain the science behind this breakthrough—hopefully in a way that won't have you sprinting for the exits.

Based on his own previous work and research by others in the field, Walters arrived at his hypothesis, the essence of which is this: that specialized sensory neurons that detect signs of bodily injury are particularly important for driving pain caused by many forms of severe injury in most animals.

"I chose SCI pain for testing this hypothesis because it's often permanent, and almost nothing is known about mechanisms of any kind of permanent pain," he says.

Several of his UTHealth colleagues collaborated on the project—notably Dr. Qing Yang, the first author on the published paper.

With the team in place, Walters proceeded with the research.

First, the work confirmed that sensory

neurons play a significant role in continually driving neuropathic pain.

"Sensory neurons are found all over the body," explains Walters. "They have cell bodies located near the spinal cord, and fibers going into the spinal cord. But they also have long fibers that go out to peripheral tissues throughout the body. When these peripheral fibers are activated, electrical signals are conducted to the spinal cord or lower brain, ultimately producing sensations of touch, temperature, or pain in higher brain centres."

There are several types of sensory neurons—for example, some are essential for touch. But Walters says that his lab's previous research had already suggested that the culprits among them were chemosensitive nociceptors—neurons capable of detecting both chemical signals of inflammation or injury in the blood, and chemical signals of inflammation generated within the spinal cord. And when these chemosensitive nociceptors are bombarded by both types of inflammatory signals, a perfect pain storm is created.

"After SCI, chemosensitive nociceptors anywhere in the body may detect inflammatory chemical signals in the blood that are released long after injury," says Walters. "However, in order to induce ongoing hyperactivity in these nociceptors, we think the blood-borne signals need to be combined with inflammatory electrical signals received by chemosensitive nociceptors' fibers within the spinal cord. We believe that, if sufficient signals of both types are received for one of these nociceptors to decide that severe bodily injury has occurred, it switches into a persistent hyperactive and hypersensitive state. We think SCI produces sufficient signals to induce this hyperactive state in many nociceptors that have fibers extending into the spinal cord, at and below the

level of injury. If firing begins in a large enough number of nociceptors—which normally are electrically silent—then pain and related problems ensue."

The result is pain that appears to be originating from areas of the body where there is often no feeling or function, and certainly no new trauma or injury present to explain the pain.

Walters adds that an intriguing idea is that a vicious cycle between hyperactive spinal cells and hyperactive nociceptors ensues and, in some sort of positive feedback loop, continuously drives pain. "As a result, blocking this vicious cycle by inhibiting hyperactive nociceptors should reduce pain after SCI—and that is what we found in this study."

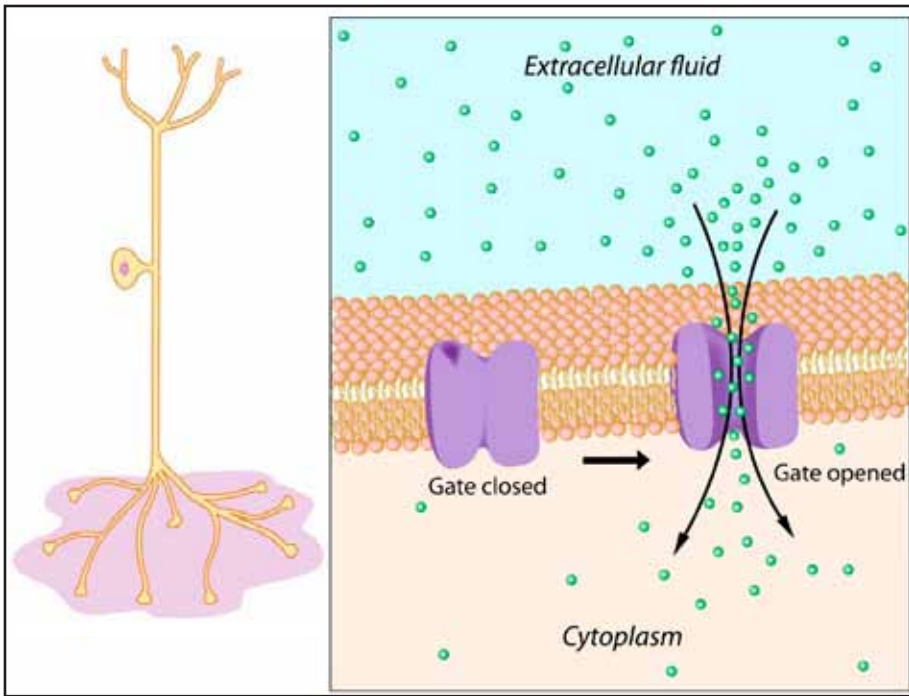
So what are these chemosensitive nociceptors actually doing when they are bombarded with a combination of these inflammatory chemical and electrical signals? What's actually happening in them to create unrelenting neuropathic pain? More important, how can they be stopped from producing these incredibly destructive pain signals?

To answer those questions, we'll start with a refresher on basic cellular biology. All living cells, whether they're neurons, blood, skin or other types, have an outer membrane which keeps the cell's contents safe. But all cells have the ability to open or close specialized openings in

"We hope these unexpected results will encourage pharmaceutical companies in their efforts to identify new drugs to target these channels that are essential for this type of chronic pain."

– Dr. Edgar T. Walters





The cell biology behind neuropathic pain: The nociceptor (left) is a specialized sensory neuron which has a single long fiber that can extend anywhere in the body. When triggered with the necessary signals, the nociceptor has the ability to create or “express” channels on its membrane (close-up on right). These channels, when triggered to open, selectively allow ions to travel from the exterior of the nociceptor (the extracellular fluid) into the nociceptor’s interior (cytoplasm). Ions are either positively or negatively charged. When enough positive ions are allowed to accumulate within the nociceptor, it acquires enough of a potential or positive voltage which results in a signal to the brain—in our case, the signal is for a burning pain. Dr. Walters and his colleagues have shown that, when the expression of a key ion channel known as Nav1.8 is suppressed, the neuron stops sending the pain signal, and the neuropathic pain recedes. The goal is to now find a safe drug or “antagonist” that can effectively suppress the expression of Nav1.8 in humans.

their membranes, which allow for the transport of vital substances across the membrane. These gateways fall into two categories: transporters and channels.

All cells utilize membrane transporters, which selectively move molecules that are critical for cell functioning and survival—for example, most cells need to import sugars from the outside environment to create energy.

But nerve cells, or neurons, also have the ability to create or express channels—a sort of pore in the membrane which selectively allows certain ions to pass through. Ions are either positively or negatively charged. If a channel opens and allows enough positive ions to cross the membrane into the cell, the membrane, which normally has a negative charge on the inside and positive charge on the outside, quickly under-

goes a reversal of this charge (this is called an action potential). Action potentials are said to “fire” because a small change in charge can ignite a much bigger change in charge across the membrane, like a match lighting a fuse. When triggered by the opening of channels that allow positive ions (sodium and/or calcium) to enter the cell, action potentials fire and are rapidly transmitted into the central nervous system and interpreted by the brain as some kind of sensation or message—for example, touch or, in our case, pain.

Walters explains that, among the many channels that chemosensitive nociceptors are able to express, two are implicated in neuropathic pain.

The first are protein channels called TRPV1, which are opened when the nociceptor receives the combination

of inflammatory signals that we talked about previously. Once opened, TRPV1 allows positively-charged sodium and calcium ions to enter the nociceptor. In turn, these ions trigger the neuron to fire action potentials and report a burning pain sensation up the pain pathways to the brain.

The second channel is known as Nav1.8. This specialized channel selectively allows only sodium ions to enter the nociceptor.

Walters says the evidence suggests that TRPV1 and Nav1.8 work together to create the hyperactive state in nociceptors that leads to chronic pain. He likens TRPV1 to a match that ignites a fuse—and Nav1.8 as the fuel in the action potential fuse that, once lit, pushes the nociceptor into a hyperactive state, carries the signals towards the brain to evoke the persistent burning sensations of neuropathic pain.

“Both the match and the fuse are needed to carry the flame that culminates in the painful sensations,” says Walters. “Removing either one should block pain produced by chronic firing of the chemosensitive nociceptors.”

In fact, other researchers have developed drugs known as antagonists that prevent the TRPV1 channels from being opened. During testing, these drugs did result in a reduction of hyperactivity and pain signalling, but they also had some severe side effects. TRPV1 is important for more than just signalling pain—it’s also a vital mechanism to regulate body temperature. And so limiting the opening of TRPV1 resulted in serious bodily overheating and other life-threatening consequences.

But Walters and his team knew that their previous findings, and that of others, suggested that Nav1.8 presented a better target for therapy. So they set out to see if they could stop the functioning of Nav1.8 channels in the chemosensitive nociceptors. The result has to be considered a breakthrough.

“We were able to reduce the amount of Nav1.8 channels in rat sensory neurons below the injury level, without affect-

ing related sodium channels, using a molecular technique called antisense knockdown,” he explains. “Knockdown of the Nav1.8 channels lasted for several days and during this time the SCI rats lost the hyperactivity in their nociceptors, as well as their hypersensitivity to mechanical and heat stimulation, and they no longer showed signs of spontaneous pain.”

That result, says Walters, was an unexpected surprise. And it’s led him and his colleagues to believe that finding an effective and safe method of identifying and blocking the function of Nav1.8 in the chemosensitive nociceptors of humans could result in a breakthrough treatment for neuropathic pain.

“We hope these unexpected results will encourage pharmaceutical companies in their efforts to identify new drugs to target these channels that are essential for this type of chronic pain,” he says.

Perhaps, like us, you’re wondering why Walters wouldn’t simply use the same technique, antisense knockdown, in a human study.

“Targeting Nav1.8 by antisense knockdown, which requires injections into the intrathecal space around the spinal cord, has many disadvantages for human use, especially for permanent conditions such as SCI,” says Walters. “And it’s a big challenge to develop a drug that is both easily absorbed in the body and only blocks Nav1.8 activity without blocking closely related sodium channels or other important biological molecules.

“On the other hand, I see no reason why such drugs couldn’t eventually be developed. Pharmaceutical companies are continuing to develop new antagonists for Nav1.8, and I have heard that at least one new drug may soon be described in a paper recently submitted for publication. The fact that targeting Nav1.8 may also be useful for other types of chronic pain will, I hope, add to the incentive for commercial efforts to develop clinically useful Nav1.8 antagonists that will help people with SCI pain.”

We’ll be keeping a close eye on further developments in this area. ■

ask the SPIN DOCTOR

“Why am I anxious at times?” asks Miriam from Vancouver. “And why does it seem to be worse when I have pain or health issues related to my SCI?” To answer this issue’s question, we turned to Dr. Verna-Jean Amell, psychologist at GF Strong Rehab Centre.



Anxiety is, unfortunately, common after SCI. Not everyone will experience it, but some people may have more persistent and complicated anxiety. It’s characterized by a feeling of apprehension or dread; a sense that there is impending danger, catastrophe or misfortune. The future threat may be real or imagined, and it may be internal or external. It may be linked to an identifiable situation or be a more vague fear of the unknown. Physical symptoms often accompany this apprehension—tense muscles, and accelerated breathing and heart rate. More complicated anxiety may be accompanied by panic, phobias, obsessions and compulsions.

As someone with SCI, you may experience physical symptoms related to the recent damage to the sympathetic and parasympathetic response of your nervous system. These symptoms are similar to your body’s response to anxiety (known as the fight-or-flight response). They include sensations such as lightheadedness, dizziness, blood pressure changes, spasms, loss of proprioception (the awareness of the position of your body and limbs), and pain. You’ll likely interpret these with alarm, but education and growing experience with your post-SCI body will help you calm down and understand that these sensations aren’t related to an anxiety state.

Later in your post-injury life, you might encounter stressful conditions which can trigger anxiety—changes with ageing, poorly managed pain, loss of independence, insufficient income, and social isolation.

It’s critical to seek treatment if your anxiety is interfering in your usual participation in life (because you’re avoiding anxiety-provoking situations), or you’re experiencing more disturbed thinking and an inability to relate to peers and family. Counsellors and psychologists are skilled in treating anxiety.

Anxiety may be accompanied by or distinguished from depression, which is a pervading feeling of sadness or emptiness.

Learning (or re-learning) to set manageable goals, challenging your thoughts, and setting behavioral steps to limit avoidance are all strategies that can help to directly reduce anxiety. Guidance from a therapist trained in cognitive behavior therapy is extremely beneficial for treating anxiety conditions. A counsellor will be familiar with anxiety disorders and presentation, but may not have experience with SCI. You can play a role in educating them. A good reference book to recommend to a counsellor is *What Psychotherapists Should Know About Disability* by Rhoda Olkin.

You may also benefit from medication—discuss this with your family doctor.

There are many provincial programs and educational materials to help you:

- www.heretohelp.bc.ca is an excellent website operated by BC Partners for Mental Health and Addictions Information. The site has many viewable or downloadable publications for diagnosing and treating anxiety.
- Self-Management BC offers The Chronic Pain Self-Management Program and The Chronic Disease Self-Management Program online and in various locations across the province. Visit www.selfmanagementbc.ca or call 1.866.902.3767 for details.
- BC Psychological Association Referral Service provides fee pay or extended health benefits payment referrals to therapists—call 1.800.730.0522.

One final note: if you believe your life, or the life of someone you know, is in danger, call 911 immediately.

Email your questions for the Spin Doctor to SCI BC Peer Program Coordinator Brad Jacobsen (bjacobsen@sci-bc.ca). Any advice given is general in nature and is not intended to replace advice specific to your personal situation provided by your family physician or SCI specialist.



Restoration Hardware

Swiss researchers are shedding new light on the mechanism behind the body's ability to rewire and restore function after incomplete SCI

We've all known for decades that some people experience partial restoration of important functions after incomplete SCI. Occasionally, these gains are dramatic, and sometimes they appear spontaneously months or even years later. It's one of the main reasons why physiotherapy, such as treadmill training (shown on the experimental Lokomat above), is heavily emphasized during rehab—it seems to help stimulate these gains.

But it's safe to say that the underlying mechanisms of this functional recovery haven't been clearly understood. While it's been thought that uninjured spinal cord tissue provides a foundation to form new circuits bridging the injury, this has never been confirmed or explored to determine why it happens.

Now, researchers in Switzerland have demystified this aspect of incomplete SCI. Dr. Silvia Arber and her team at the University of Basel and the Friedrich Miescher Institute for Biomedical

Research, in collaboration with Dr. Grégoire Courtine's research group at École polytechnique fédérale de Lausanne (EPFL), demonstrated in a mouse model how this phenomenon works. The study's findings were published in a recent issue of the journal *Cell*.

Recovery of this nature is the result of a specific sensory feedback channel that begins in muscle spindles—specialized sensory neurons embedded within the muscles, according to Dr. Aya Takeoka, a member of Arber's team and the study's first author. She explains that, when the muscle spindles are activated, even with passive exercise within paralyzed muscles, they send signals via sensory circuits back to the spinal cord. In turn, this promotes the establishment of new neuronal connections in the spinal cord after injury. The team believes these findings may lead to development of new strategies for treatment and enhancement of the recovery process.

"This particular project began more than four years ago," says Takeoka. "We built this study based on the knowledge that, after incomplete spinal cord injury, it's been shown both in humans and animal models that locomotor training has a positive impact on locomotor recovery. We also knew that, in animal models, removal of all feedback from muscles back to the spinal cord leads to diminished recovery. We chose to study muscle spindle feedback circuits because these are the only ones providing synaptic feedback to motor neurons."

When able-bodied people move a limb, explains Takeoka, they activate the sensory feedback loops from the muscle spindles to the spinal cord. The feedback loop is, in essence, providing confirmation to the brain that the limb's muscles have carried out the command to move. But even when the top-down transmission of signals from the brain to the spinal cord and beyond to the targeted muscles are no longer possible because of an SCI, this specific feedback channel keeps on ticking, providing bottom-up feedback signals to the central nervous system when the limb is moved. In turn, says Takeoka, this promotes the repair process of the damaged spinal network after injury, with basic motor function sometimes restored.

"We demonstrate in the study

Dr. Sylvia Arber



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that the presence of the sensory feedback from muscle spindles influences the ability of the brain and the spinal cord to form new, detour connections that bypass the lesion site," she says. "Sensory feedback triggers the formation of new branches from the nerve cells still projecting below the lesion level to re-establish connectivity from the brain to the spinal cord. As a consequence, instructions from the brain can reach muscles again once recovery has occurred. The nervous system, even during adulthood, retains some level of flexibility to undergo changes in connectivity between nerve cells."

The study confirms that all that physio during rehab is important—it's what triggers activation of muscle spindles. "Our work corroborates the efforts put in by patients and physiotherapists for years in the clinics, and thus indeed our findings do point to a possible mechanism by which this approach works," Takeoka says.

She adds that therapeutic approaches should aim to extensively use the muscles, even if passively after an injury—the more intensely muscles are used during therapy, the more the muscle spindle feedback circuits are stimulated. By applying this principle, the repair of neuronal circuits and the accompanying recovery of basic motor skills have the best chances of succeeding.

If there's any negative aspect to the research, it's that it also confirms that only basic locomotor functionality can be restored spontaneously after an injury—and that fine locomotor performance will likely remain permanently lost.

"Different combinations of nerve cells are required for different kinds of motor tasks," explains Takeoka. "We believe that sensory information from muscle spindles can facilitate basic locomotor ability likely due to requirement of comparatively crude re-established connections to convey impulses from the brain. In contrast, much finer mo-

tor functions likely require more precise and refined connections from the brain. It's important to note that the original connections severed by the injury do not spontaneously reconnect. The nervous system utilizes the remaining connections to compensate for the loss, and it is this process that is facilitated by muscle spindle feedback."

We asked Takeoka what direction she and her colleagues will now take.

"We have just begun to gain insight into the mechanisms of locomotor recovery after spinal cord injury. We now know that this particular sensory channel is important for locomotor recovery. We now need to understand what exactly the role of this sensory feedback is. Where does it act? What are the critical nerve partners connected to these sensory neurons that are responsible for recovery? We would like to more fully understand the underlying mechanisms of recovery to specifically activate identified populations of nerve cells." ■

Are you having difficulty passing an intermittent catheter?



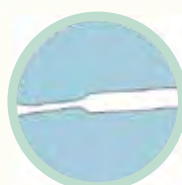
Bulges

in the urethra prevent an easy passage of the catheter and increase the risk of injury.



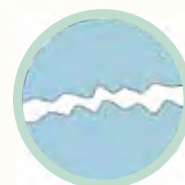
An enlarged prostate

or a spastic sphincter make passing the catheter into the bladder even more difficult.



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after micro traumas result in a more difficult passage for the catheter.

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With a vision of *championing excellence in service, advocacy, and quality of life for people with spinal cord injuries and a mission to assist persons with spinal cord injuries and other physical disabilities to achieve independence, self-reliance, and full community participation*, SCI Ontario is seeking an inspiring:

Chief Executive Officer

Reporting to the Chair, Board of Directors, Spinal Cord Injury Ontario, and to the Chair, Board of Directors, Ontario Paraplegic Foundation, the Chief Executive Officer will build, share and advance a vision that captures the imagination of stakeholders through service delivery innovation.

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Given the essence of Spinal Cord Injury Ontario, lived spinal cord injury experience will always be considered an important criterion among the criteria that are part of any given leadership search. SCI Ontario is an equal opportunity employer dedicated to achieving accessibility in employment for persons with disabilities, while ensuring inclusive, barrier-free selection processes and work environments. Reasonable and appropriate accommodation will be provided during the recruitment process upon request and addressed confidentially. We thank all applicants; however, only those under consideration will be contacted.

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Trailblazer

A salute to Wolfgang Zimmermann, who has dedicated his life to helping people with SCI and other disabilities kickstart their careers.

The world's only degree-granting university dedicated to workplace health and safety, return-to-work, and disability management is located in none other than Port Alberni on Vancouver Island. Last September, the Pacific Coast University for Workplace Health Sciences (PCU-WHS) opened its doors to its first academic students. They're now completing their first year of studies in the university's brand new bachelor's program in disability management. When they graduate, they will be highly educated professionals specializing in helping people access or return to the workforce after SCI or other injury.

The university is the crowning achievement of Wolfgang Zimmermann, a trailblazer who has dedicated his life to the cause of injured workers.

Zimmermann's quest began in 1977 when he met his future wife in his native Germany and followed her back to her home community of Port Alberni. He quickly found work as a logger with MacMillan Bloedel, but after only five days on the job, he sustained an SCI when a large tree fell on him.

In the 70s, most injured forestry workers essentially became wards of workers compensation boards. Zimmermann never considered that for a second. He retrained and returned to work with MacMillan Bloedel as an accountant.

In the process, he acquired a passion for helping others in similar circumstances. When he viewed the reality of the day, he saw a lack of emphasis on workplace safety, along with a confusing myriad of government programs that seemed to create a welfare-like state for injured workers, rather than one that eased the way for them to find their way back into the workforce.

Zimmermann saw that this approach often led to lives of dependence. And he also realized that, collectively, their dependence represented billions of dollars of expenditures annually (consider that the current total cost of worker's compensation in Canada is about \$7-billion a year—a figure that doubles when other disability costs are added in).

And so he became determined to influence change. The solution, he believed, was developing a credible academic approach to disability management. In 1994, he created the National Institute of Disability Management and Research (NIDMAR), an organization that would promote education, training and research as tools to reduce the human, social and economic costs of disability.

Over the years, NIDMAR gained an international reputation through its disability management programs that began to be increasingly offered as an elective at several colleges and universities around the world. It also created a powerful tool to audit an organization's total cost for disabilities among its workers, which is still widely used by governments and corporations globally.

Zimmermann wasn't satisfied. He knew that NIDMAR programs and similar courses were only offered in a somewhat scattered, piecemeal approach, with no single institution focused entirely in the field. He found himself envisioning the creation of a small university dedicated solely to educating students in all aspects of disability management and workplace health. Armed with the credibility of NIDMAR's successes, Zimmermann tirelessly promoted the concept to governments, industry, and labour leaders.

In 2007, his tenacity began paying off when BC MLAs voted unanimously to

legislate PCU-WHS into existence. Then, in 2009, the federal government committed funding for the physical construction of the university. Shortly after, the city of Port Alberni stepped up to the plate and donated 1.4 hectares of land.

Five years later, construction of the Pacific Coast University for Workplace Health Sciences was completed.

"PCU-WHS is the only university, nationally and internationally, with a specific and statutory mandate on all aspects of workplace health—namely occupational health and safety, return-to-work, rehabilitation, and disability issues generally," says Zimmermann, who is president of the university.

With students hailing from around the globe, its curriculum will continue to be offered via a blended model of classroom instruction and online distance learning. While it's currently only offering its first degree—the bachelor's in disability management—the goal is to eventually offer a range of degrees and diplomas in all aspects related to workplace health.

A lot has changed in the 37 years since Zimmermann's injury. Governments and industry have slowly realized that failing to help injured workers return to careers is incredibly costly. And that, says Zimmermann, is why the future is bright.

"There will be many opportunities in the return-to-work and disability management field," he says. "In my view, the hurdles preventing more people from working are about little more than attitude—a focus on the disability as opposed to the ability. The solutions to this challenge are many, including attitude—both on the part of the worker, and the employer, which is where PCU-WHS fits in. We are gradually making significant progress, and to be part of this success is very rewarding." ■



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