

# gizmo

THE TETRA SOCIETY OF NORTH AMERICA: CUSTOM ASSISTIVE DEVICES

## Flying the flag for Canada – and everyone with a disability



**VERNON:** Both Canadian flagbearers at the Sochi 2014 Paralympics are Tetra clients who hope their gold medal success serves as a beacon for other people with disabilities.

Sonja Gaudet proudly carried the Canadian flag at the March 7 opening ceremony, and Josh Dueck in the closing celebrations – at which point Sonja was proudly wearing a gold medal and Josh, gold and silver.

Both medal-winners live in Vernon, BC and were supported by the town’s Tetra chapter as they progressed through their sport: Wheelchair curler Sonja Gaudet received a curling brace, and Josh Dueck one-of-a-kind sit-ski bindings.

Gaudet, 47, suffered a spinal cord injury falling from a horse 16 years ago. She received the curling brace from the Vernon chapter of the Tetra Society back in 2009, and currently uses a similar model provided by the Canadian team.

“The Tetra device means people with high level disabilities are able to participate in curling,” she said. “It’s wonderful. I run the peer program for people with SCI in Vernon, and people are really taking to the sport because of this Tetra project.”

The brace allows wheelchair curlers to put more power and accuracy into their shot. Vernon coordinator Randy Schellenberg is working on a similar project for a client in Alberta, and in 2012 helped Tetra’s Regina chapter to make one for a curler in that city.

Around the same time, the Vernon chapter created sit-ski bindings for Paralympian Josh Dueck – bindings made for regular skis are intended to come apart in a fall, making them too weak for sit-ski use.

Dueck, 33, who suffered a spinal cord injury overshooting a ski jump 10 years ago, put

Schellenberg’s bindings in the spotlight when he became the first person to perform a 360-degree back flip in a sit-ski at Whistler in February, 2012.

Schellenberg, despite claiming a “healthy personal respect when it comes to the potential for injury,” is in awe of the likes of Dueck and Gaudet and their drive to excel.

“I know a lot of skiers and snowboard types for whom sport becomes part of their persona,” said Schellenberg. “It’s part of who they are. It’s clear why people want to continue to play sports after suffering a major injury.

“There is some elementary force that drives these people to excel.”

Dueck said that it was a great honour to compete and represent Canada and then come back home to share the excitement.

“Collective effort gets you onto the podium,” he said. “A huge amount of energy invested by a lot of people. It’s not about me, it’s about them.”



COOL AS ICE:  
GOLD MEDAL  
WINNER SONJA  
GAUDET

### TETRA VOLUNTEERS IN THE SPOTLIGHT MAY 29, VANCOUVER, BC

**VANCOUVER:** Tetra volunteers who devise and construct devices that transform the lives of people with disabilities will be celebrated in May.

The Tetra Society of North America is a charity which, through volunteer-led chapters across Canada and the US, recruits engineers and technicians to create ‘gizmos’ for people with disabilities.

The Vancouver chapter will host its Gizmo Awards at the city’s Sheraton Wall Centre Hotel on May 29, to bring together volunteers, clients and supporters.

Tetra was started in 1987 by Vancouver native Sam Sullivan, after engineering solutions – low cost and simple – revolutionized his life as a quadriplegic. Tetra has grown over the ensuing 27 years but remains true to Sam’s original vision: volunteers can create amazing access and independence!

The awards event will highlight ingenious and inspirational assistive device projects from across Metro Vancouver, while also celebrating Tetra’s most prolific and longest serving volunteers.”

# Double double: two sets of twins Challenge Tetra

**GUELPH:** A double delivery of twins – that is, two separate sets – within a year demonstrates the increased demand for wheelchair accessible cribs in southwestern Ontario.

Tetra has noticed a growing demand for crib adaptations over the past few years. More men and women with mobility impairments are opting to start families, and yet it seems accessible cribs are harder to find than ever.

A modified crib with swing-open doors can be every bit as child-proof as a regular crib and can also allow a parent to roll under – that is, tuck their knees under the base of the crib like sitting at a table.

The first request for a double crib came from a Guelph family in around Christmas 2012, the second from nearby Kitchener in November 2013.

“This latest request came from a lady in her early thirties, pregnant with twins,” said Tetra Guelph chapter coordinator Leanne Conrad. “She had two baby boys, born in January 2014 – the first set of twins had been born January 2013.”

The chapter sourced an adapted crib originally made by volunteers at Tetra’s Hamilton chapter, which was used by both sets of twins, although with updates along the way. Each client needs to purchase a new crib mattress.

Guelph volunteers updated the original crib to better fit into the client’s bedroom. Both of the January 2014 twins were initially sharing this crib while the volunteers fabricate a second crib – which is expected to be completed by press time.

At this point, each baby will be safe in its own accessible crib, with accordion-style doors held securely in place by locking handles – below the mattress, and thus safely out of reach of little hands.

“The original crib from Hamilton is now holding its third generation – and again being used by someone who uses a wheelchair, and the second time around with twins,” said Conrad.

“The latest parents already had a child, so now they are caring for three. It’s busy. That’s why a wheelchair crib is so important – both parents can access the twins when they are both crying at the same time.”

I HAD NEVER  
HELD A GUITAR  
BEFORE, BUT I  
KNEW IT WAS  
THE INSTRUMENT  
FOR ME.”

RICHARD QUAN



## So you want to be a rock 'n roll star?

**VANCOUVER:** Playing guitar on stage before a packed and loudly appreciative audience would be a dream come true for just about any teenager.

But it meant the world to Richard Quan, a 20-year-old guitarist from Vancouver who has a highly progressive form of muscular dystrophy.

It was made possible by a Tetra-designed guitar holder that clamps securely onto Richard’s wheelchair, which he uses to learn, record and play live. The innovative device is built on two levels: a top sheer-finish shelf that acts as an arm rest, and a lower holder that clamps Richard’s Stratocaster firmly into place.

The process began two years ago when Richard was taking a tour of a recording studio operated by Vancouver Adapted Music Society (VAMS) at GF Strong Rehab Hospital, which features many Tetra modifications.

“I saw a bunch of guitars, and asked if I could look at one,” said Richard. “I had never handled one before.

“I strummed it, and loved how it sounded. I had never held a guitar before, but I knew it was the instrument for me. That’s how it all started.”

At first, Richard played with the guitar resting flat on a hospital table – not ideal, as he is unable to lift his arms and the guitar was prone to slip out of reach. Richard’s father Benny asked Tetra for help.

Volunteer Marvin Pflug created his wheelchair guitar holder in 2011, and earlier this year, volunteer Peter Newell created a hand-operated effects pedal. Currently, volunteer Radu Postole is working on a portable version of Marvin’s original design so he can make live appearances more easily.



These projects, combined with two lessons a week and hours of practice, have seen Richard progressing – he played in a school concert late 2012, and last year was invited to contribute lead guitar to a showcase CD, *The Strong Sessions*, produced by Tetra’s sister society the Vancouver Adapted Music Society (VAMS).

He can be heard on the CD, released November 2013, playing his Stratocaster alongside up-and-coming Vancouver indie singer Tamara Nile, and also backing up multi-instrumentalist Rolf Kempf.

Richard took to the stage at SFU Woodward’s, in front of an audience of around 250, during the concert that both launched the CD and celebrated the 25th anniversary of VAMS.

“I was nervous,” he admits. “When I went onto the stage I was scared I’d make a mistake. When I was playing I didn’t really notice the audience – I was concentrating on the song.

“When we finished I heard the applause – I realized how loud it was, and how many people were there.”

Watching from the front row was Richard’s proud father Benny and invited guests.

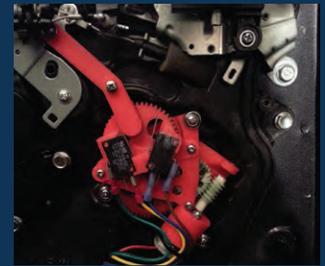
“I was so impressed. It was a real big day for us,” said Benny. “There was a big group of supporters cheering Richard on – he’s just transitioned away from BC Children’s Hospital and Canuck Place. It was almost like receiving a wish grant.

“He’s beaten a lot of odds to make it as far as he has.”

Marvin Pflug, who made Richard’s first guitar holder, passed away, aged 69, in May 2013. He is missed by everyone connected with the chapter.

**GUITAR HEROES:** RICHARD QUAN WITH THE LATE MARVIN PFLUG.

**ABOVE:** RICHARD ROCKING IT BEFORE A PACKED AUDIENCE.



**FLY BY WIRE:** TETRA'S TAUKEER ASHRAF IN THE PROCESS OF FITTING THREE MOTORS INSIDE A MAZDA 5 DOOR PANEL (ABOVE) WITH THE CIRCUIT BOARD THAT IS THE BRAINS OF THE UNIT AND THE THREE-DIMENSIONAL PRINTED LATCH RELEASE THAT OPENS THE DOOR ON COMMAND.

## Opening doors for people with disabilities

**SASKATOON:** It began with a simple question: Is it possible for someone who uses a wheelchair to access a smaller vehicle?

Lynn Archdekin, of Saskatoon, wanted to replace her existing vehicle with something more reliable – essential when winter temperatures can reach -40 C, as they did earlier this year – but she wanted something more maneuverable and fuel efficient than a van.

Lynn, 62, accesses her vehicle by transferring to the driver's seat then reaching round to lift her wheelchair into the rear footwell.

"I used to have a Nissan Sportswagon that I could get into by myself and manually close the doors, but my left shoulder started giving out from closing the rear door all the time," she said. "A physiotherapist said I should be doing something different or my shoulder would not be workable.

"Then, in 2006, I went looking for a vehicle with a sliding door behind the driver. The problem is they are all too high for me to transfer. I bought a Mazda MPV minivan, which has an automatic door, and had air suspension added so I could transfer from my wheelchair."

Although the Mazda is reliable, the air suspension freezes in Saskatchewan winters. "When it's really cold I'm afraid to lower it. I couldn't go on with an unreliable vehicle when temperatures are minus 30."

The challenge then, was to find a modest sized, reliable vehicle with an automatic, sliding rear door.

So she asked Tetra's Saskatoon coordinator, Taukeer Ashraf, if it would be possible to automate a sliding door in a Mazda 5. It turned into a more complicated project than anyone could have realized, but neither regrets the lengthy process.

Taukeer began by calling Mazda dealerships to find one that would allow him to look inside – that is, take apart and re-build – a Mazda 5 rear door. The manager of Rally

Mazda in Prince Albert, a two-hour drive away, offered him a 2005 model to examine.

"I took the panels off – there was a lot of space to fit motors," he said. "I called Lynn and said it was a possibility. She called back and said she'd just bought a brand new car."

It was when the \$27,000 top of the line Gi model sat outside his house, Taukeer realized the task had just become more complex.

Like the Johnny Cash song *One Piece at a Time*, the car's design had changed over the years. Until 2009, Mazda fitted a power closure into these sliding doors, a small motor with just enough strength to pull the door the final part of the way shut. Nowadays, there is just an empty panel.

The project required fitting three motors in a small space – the first to open the door latch, the second to pull the door open and closed, and the third to close the latch.

"There was just enough space for it to be feasible," Taukeer noted. "I had to have circuit boards made from a prototype I built because there is a sequence to have the door opened. Once it senses the door is unlocked the drive motor engages, or when you push the switch to close the door, it has to check if it's fully open or not."

Taukeer said he originally estimated the project would take four weeks, but the job expanded to take four months. ("If I was working eight-hour days I probably could have done it in four weeks.")

When completed – the project works but the car had not been re-assembled at press time – the offside rear door will open with the push of a button, and close when the button is held down.

Lynn, who has been receiving weekly updates from Taukeer, is still using her Mazda MPV, as the dealer said he'd complete the sales transaction once the Tetra project was complete. "Taukeer is doing a fantastic job," she said.

## Thanks to Tetra, now everyone can play!

**HAMILTON:** Tetra's Hamilton-Halton chapter has made boccia more accessible for youngsters with high-level disabilities.

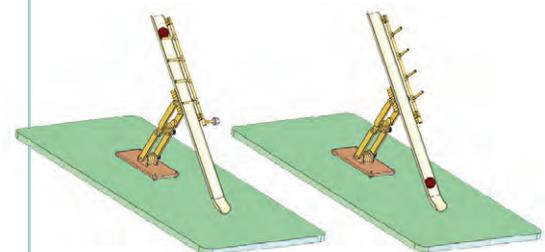
The chapter was approached by Karen Natho, president of Brock Niagara Penguins swim and gym team for youth with disabilities, who said many of the youngsters played boccia by knocking the ball down a ramp with their foot.

It was the first Tetra project of new volunteer Harold Anderson, an electrical specialist, who worked alongside longstanding volunteer Jim Rennie. They sliced six-inch-diameter plastic drainpipe in half lengthways to create a channel, across which they placed four electrically-operated gates; it became a free-standing bowling chute by the addition of a stand.

"The electronic gates are similar to those at a horse race," explained chapter coordinator Sylvia Baliko. "The children playing choose which gate to use – the boccia ball obviously travels faster and further depending on which gate they use.

"They push a lever and the gates raise and the ball is released. The entire ramp is not heavy, so they can aim it themselves."

She said the group immediately asked for two more "so that all the kids can play together – with dignity."



**HAMILTON'S ELECTRONIC BOCCIA RAMP**  
GATES CLOSED: BALL IS HELD IN PLACE  
GATES OPEN: BALL IS RELEASED

# VOLUNTEER RECOGNITION



ACCESS ALL AREAS: CITY OF BURLINGTON COUNCILOR  
BLAIR LANCASTER AND MIKE MCNALLY

**HAMILTON:** Long-time Tetra volunteer Mike McNally received civic recognition for his work for people with disabilities.

Burlington's Accessibility Advisory Committee presented him with an Accessibility Award in June 2013 for "significant contributions to increase access and participation of people with disabilities in our community."

He has been volunteering since 2005, where Hamilton-Halton coordinator Sylvia Baliko describes him as "the corner-stone of our chapter."

## Thankyou!

The support of the following organizations is making assistive devices like those featured in this edition possible across Canada:

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- Servus Credit Union
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- Knight Piesold Ltd.
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- Green Shield Canada
- United Way of the Lower Mainland
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