

gizmo

THE TETRA SOCIETY OF NORTH AMERICA: CUSTOM ASSISTIVE DEVICES

Hand in glove with health professionals and patients

HAMILTON-HALTON: The region's largest rehab centre turned to Tetra for help creating projects to aid patients going through rehabilitation.

Staff at Hamilton's Regional Rehab Centre requested six Tetra projects – four pairs of hand-cycle gloves, one pair of 'grippy' palm gloves to teach wheelchair transfers and a set of transfer-aiding blocks.

The three-storey, 106,000-square-foot rehab centre serves more than 2.3 million residents of Hamilton and south central Ontario. Staff found these smaller items of rehabilitative equipment had either worn out or gone missing at the fully-accessible centre.

The initial request was made in September through chapter coordinator Sylvia Baliko's brother Ron, a C4-5 tetraplegic who fell from his wheelchair last year and is an out-patient.

"He made a lot of contacts there – and when he noticed they were using two mis-matched gloves for people that didn't have the grip strength to hold on to the table-top exercise machine he recommended Tetra," said Sylvia.

"The gloves are used by tetraplegics, people who have had strokes or have multiple sclerosis and have no grip strength.

"We also made palm gloves, which use a non-slip material for people learning to transfer into a wheelchair. Basically, your hands might slip from the arm rests of your wheelchair when you are learning the technique," she said.

"The difficulty is sewing the material, manufactured by Dycem, because the needle goes through it and then sticks. I had to put a layer of tissue paper over the top and sew that into the gloves, then tear it off afterwards."

The transfer blocks are a short length of plywood, padded by foam and held together by a leatherette material, which Sylvia again sewed together. These are used by paraplegics learning



new transfer techniques – to give a little more clearance when swinging between bed and wheelchair.

Physiotherapist Diana Herrington, who requested these projects on behalf of Regional Rehab Centre, said they are in daily use.

"The handcycle gloves are in both the in-patient and out-patient gyms, and are used by everyone with SCI who cannot grip," she said.

"We help the patients to set up on the exercise machines, but they can detach themselves when they are finished.

"We have had transfer blocks before, but we couldn't get exactly what we wanted. When we told Sylvia's brother, Ron, he said he'd get them made. They turned out exactly to specification.

"I'd heard of Tetra before, but I'd heard it might take a few months to have custom projects like these made. In fact, I was really pleased to receive them so promptly," Diana added.

The projects were turned around within weeks despite the fact that it has been a busy year for the Hamilton chapter with 51 requests for projects received by November, of which more than 30 had been completed and 10 were in progress at press time.

Sylvia completed 15 which required sewing. The most recent involved making four pairs of specialized pajamas and waterproof duvet covers for severely autistic girls aged 11 and 14. They had been wearing diapers, but had been removing them during the night due to obsessive compulsive issues, forcing mom to wash the sheets daily.

Their new pajamas are reversed – sewn up at the front with zippers added to the back – to hold diapers securely out of reach, and, as an added level of security, their duvets are now within a plastic layer from sleeping bag covers stitched together with six-foot zippers.

Tetra Volunteers in the Spotlight

Stantec is Digging It

VANCOUVER: Volunteer George Shipley fabricated eight wheelchair-accessible garden beds in one afternoon – aided by staff from the Vancouver office of a Canadian engineering giant.

George, a long-term volunteer, who coordinates weekly woodworking sessions for people with disabilities at the Vancouver chapter's own fully accessible workshop, directed this project which involved employees of Canadian engineering firm, Stantec.

The roll-under, raised-beds were built at an event at George Pearson Centre, a Vancouver rehabilitation and long-term stay centre where residents grow a variety of healthy produce.



TEAMWORK: STANTEC VOLUNTEERS AT WORK CONSTRUCTING RAISED-BED GARDENS

The raised-bed gardens will be distributed between Pearson and three other accessible community gardens run by the Disabled Independent Gardeners Association, one of Tetra's sister organizations in Vancouver.

Making Tetra Possible

The Tetra Society of North America would like to thank the following organizations whose generous support through 2014 has made it possible for us to continue to create custom assistive devices:

- BC Rehab Foundation
- Chris Spencer Foundation
- Community Foundation of Lethbridge and Southwestern Alberta
- Community Foundation of Southeastern Alberta
- Edmonton Community Foundation
- Face the World Foundation
- Geoffrey H Wood Foundation
- Hamber Foundation
- Harold E Ballard Foundation
- Hylcan Foundation
- JP Bickell Foundation
- Knight Piesold Ltd.
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- Loyal Protestant Association
- Mr. and Mrs. PA Woodward's Foundation
- Oakville Foundation for Intellectually Handicapped People
- Optimist Club of Hamilton
- Shoppers Drug Mart - Life Foundation
- Stantec Consulting Ltd.
- SurreyCares
- Vancouver International Airport
- Wilf and Jean Bell Foundation

Cup of Cheer!

VICTORIA: Tetra's chapter in the BC capital has just completed a request for a wheelchair cup-holder that can hold water bottles, coffee cups and the occasional rink-side beer.

The holder is joined together with mesh, said chapter coordinator Chris Marks, who has been leading the rejuvenated chapter this past year.

"The project is for a man who wanted to be able to hold both big cups and small. He wanted it to be able to withstand a hit because he'd found, in the past, that cup-holders can easily get knocked off and broken.

"The client is a big hockey fan, and he wants to be able to put a beer in it when he goes to the rink."



ACHIEVEMENT: DR. LEONARD LYE RECEIVING TETRA'S LIFETIME ACHIEVEMENT AWARD FROM DR. DOREEN NEVILLE, ASSOCIATE VICE-PRESIDENT (ACADEMIC) AT MEMORIAL UNIVERSITY, ST. JOHN'S, BACK IN JUNE.

Award to Tetra's class act

ST JOHN'S: Tetra's longest serving chapter coordinator will receive another well-deserved award for using engineering smarts to overcome everyday barriers faced by people with disabilities.

Dr. Leonard Lye, associate dean in the Faculty of Engineering and Applied Science at Memorial University, St. John's, will receive the President's Award for Exceptional Community Service in recognition of his 18-year leadership of the town's Tetra chapter on December 11, 2014.

Dr. Lye, who has worked at Memorial since graduating from the University of Manitoba with a PhD in civil engineering in 1988, has been volunteering with Tetra since 1996.

"I didn't expect to receive this award," he said. "It felt very good just to be nominated, but to win it was a bit of a surprise."

One of Dr. Lye's many innovations over the years has been the use of engineering students in the creation of Tetra projects, which he said not only teaches basic engineering principles but also instills a sense of community.

The more straightforward projects go to students taking the first year engineering graphics and design course, and more complex ones to the capstone design course in the final year – although Dr. Lye also completes projects that lack teaching potential in his basement. He detailed this approach in a paper, Incorporating Real-Life Open-Ended Design Projects in a First Year Design Course, given to the 2011 Canadian Engineering Education Association Conference, which has inspired universities around Canada to work with Tetra.

Dr. Lye's most recent project is a keyboard template for a business writer who struggles with his keyboard due to Parkinson's disease.

"He's a professional writer, but lately he's been finding his hands too shaky to hit the right key," explained Dr. Lye. "We made a template that fits exactly over the keyboard of his MacBook – it was tricky making it an exact fit, requiring CAD drawing with a waterjet cut."

His student's next challenge will be to create a boccia ramp for a 20-year-old player who lacks arm and leg function due to cerebral palsy.

"I read about the Hamilton chapter's ramp with the electrically operated gates in Gizmo [Spring 2014]," he said, "but according to the official boccia completion rules this young man is required to have direct contact with the ball and cannot use a release mechanism."

Meanwhile, he has a group of third-year students volunteering for the St. John's Tetra Society, inspired by their first year project, back in 2011, to create a guitar strummer for a 20-year-old woman with cerebral palsy. They are currently making a variety of devices for a man with Lou Gehrig's disease (ALS).

One aspect of running a long-established chapter is meeting people for whom Tetra has made a difference in their lives. Earlier this year Dr. Lye gave a talk to a stroke support group and found that the audience included a recipient of a previous guitar strummer project – "I got to ask how he liked it."

Earlier this year, Dr. Lye received a Lifetime Achievement Award from the Tetra Society in recognition of more than 90 accessibility projects completed over the years, announced during the Vancouver chapter's Gizmo Awards in May 2014.

He was awarded the Canadian Society for Civil Engineering Outstanding Contribution Award in 2014, was the winner of the Professional Engineers and Geoscientists of Newfoundland Teaching Award in 2001 and the President's Award for Distinguished Teaching in 2003.

Dr. Lye is also active with the Taoist Tai Chi Society, which he co-founded with his wife, Brenda, and also has business interests relating to his design innovations. He is the inventor of the Footworker-Pro, a device for squash training that is used by professionals and national coaches in more than 20 countries. DOE-Golfer is used by multinational companies and universities across North America to teach engineering principles.



COME ON DOWN: TETRA CALGARY'S PROJECTS ALLOW SENIORS TO ENJOY BOWLING AND ALSO PLAY PLINKO (AS LAST SEEN ON T.V.'S THE PRICE IS RIGHT).



READ ALL ABOUT IT: NADINE LINDSTROM PROMOTING TETRA IN PRINCE GEORGE.

Bowling Project Strikes Gold

CALGARY: A bowling game devised by an acclaimed opera singer is performing perfectly for Calgary care homes.

Shortly after retiring from his professional singing career, Jim Monk was visiting his elderly mother in a city care home when he noticed that a battered old bowling ramp had the potential to involve all residents in an active, and social, pastime.

He also saw that a few design improvements would make a bowling ramp that was more inclusive for residents and more convenient for staff at Beverly Centre Lake Midnapore, Calgary.

The Canadian baritone had enjoyed a five-decade musical career since landing his first principal role with San Francisco Opera in 1966. Appearing as Allan Monk, he toured North America and the United States, enjoyed a lengthy stint with New York's prestigious Metropolitan Opera, and, in 1985 was made an Officer of the Order of Canada.

Jim, 72, who retired from singing to care for his wife, was no woodworker. But he is a personable and hard-working individual who knows how to get things done – and was soon talking to Tetra volunteer Brian Graham.

“We worked together over a couple of months, improving the design,” said Brian. “We built three ramps at the time, which Jim delivered to nursing homes.

“He came back to write a donation cheque. Later, when Tetra had a reception evening, I suggested inviting Jim in recognition of his donation. He was asked if he would be interested in serving on the board.”

This was back in 2012. Jim is currently president of the board, where he acts as a roving ambassador for the city's chapter, making presentations to people with disabilities.

Kelly Nesbitt, adult day program manager at Beverly Centre, said their Tetra bowling ramp is in constant use with people diagnosed with dementia.

“It works great. It's the right height for people in wheelchairs, and it is a social activity that brings everybody together. Everybody gets a turn and there is there's cheering and team spirit,” Kelly added.

“We'll be using the bowling ramp for a long time to come. We can run bowling tournaments when we are arranging activities, but we can also bring it out at short notice if we realize we need to switch quickly between activities.”

In September of this year, Brian completed a four more bowling ramps, with slight modifications to the original design. The new incarnation rolls easy-to-clean bocce balls along a 360-cm Astroturf bowling lane, with a wooden backstop behind the pins. All component parts stash away in the unit when not in use.

“My mother is in a care centre, and my wife is at another care centre with dementia,” said Jim. “After working on the initial design I wanted another one for my wife. The word got round and more facilities and Alzheimer's groups started requesting them.

“The ramps are at wheelchair height, and the only physical requirement to bowl is being able to move your arm forward one inch. My mother bowled when she was 96,” he said proudly.

“They might bowl for one hour every day. It's a social activity – everyone cheers when someone gets a strike. There is a lot of laughter and lots of socializing. If someone can't hold playing cards they can still bowl.”

Jim, who has recently received a request for an additional bowling ramp, recently worked with Brian to devise a giant plinko game – in which a ping pong ball drops through an array of pins to land in hoppers marked with scores, similar to the Price is Right game. Their version is button-operated to make it fully accessible.

It is currently in use at the Beverly Centre – with versions requested by four more centres so far.

Tetra's very own MacGyver

PRINCE GEORGE: A modification to an elasticated band that allows a lady with tetraplegia to stretch may sound simple enough, but Tetra coordinator Nadine Lindstrom knows how much difference it can make.

Nadine, who has multiple sclerosis, puts her own mobility down to stretching, through a yoga regime, and walking.

“Anybody with MS has muscle spasticity – to me it's stiffness,” she said. “I don't take medications, I take a lot of exercise!”

While conceding that not everyone with MS is able to walk, she says every person with a disability should take as much exercise as physically possible. Which is why she was so keen to oversee the project to allow a 53-year-old lady to use an exercise band to ‘stretch’ her legs and feet.

“The lady called us because she'd been without her exercise band for years,” said Nadine.

“I went to see her with volunteer Steve Seeback. I sat talking in her living room, and he asked if she had a wire coat hanger.

“He bent it like MacGyver, then got some duct tape and made a strap from it that would loop over her foot – and fixed her exercise band there and then. The project was completed before we had finished our tea.”

Another of Steve's projects from earlier in the year involved repairing an office chair for a lady with MS. Unable to find a replacement that would be as good for her back, she asked Tetra for help with worn out casters.

And fellow volunteer Bruce Cox created a scooter iPad holder for Handy Circle Resource Society volunteer Ken Biron, which allows him to make use of his iPad while on the move.

“One of the things he does with it now is take pictures of how bad the streets are – pot holes and inaccessible curbs and steps – and takes them into city hall!”

Nadine met Ken when he offered her table space with disability resource group Handy Circle at a volunteer expo – just one of the many contacts she's made since taking over running of the chapter in June 2013.

Back to School to meet future needs

REGINA: Tetra's Regina chapter is building to the future by working with high schools and university students.

It allows the chapter to reach out to new clients while simultaneously attracting volunteers, said coordinator Terri Sleeva.

For more than two-and-a-half years the city's chapter has been calling on the services of David DeMontigny, associate dean at the University of Regina engineering department. With a core of engineering student volunteers, David oversees Tetra projects for the university's estimated 350 students with disabilities – and anyone else that asks the chapter for help overcoming a barrier of some sort.

The engineering students, fresh from completing a sit-ski with the added complication of being adjustable to deal with weight loss for Saskatchewan Ski Association in Prince Albert, are now designing a 'massaging' chair for pupils with autism.

The request came from staff from a special education department of Winston Knoll Collegiate, a public high school in Regina.

"When children with autism get agitated, they find massage very calming," said Terri. "We took a chair from the school and we're fitting airbags, which will go at chest level, which can give just enough of a massage to calm students down."

Another project being tackled by engineering students, through the Tetra Society, is the creation of an arm cuff to hold an Xbox controller for a man with limited dexterity.

And, in the immediate future, Terri will be branching out by involving another city high school. Staff at Campus Regina Public, which provides industry-supported technical skills and trades training for Grade 11 and 12 students, would like to get involved in Tetra projects.

"The students need project ideas," continued Terri. "We will begin supplying requests to them. It will need to be for things that can be fabricated in the school shop – which is very well equipped, with engineering, mechanical and woodworking function."

Meanwhile, long-term volunteers Damien Bolingbroke and Bill Olson are devising a control interface for a motorized hospital bed for a lady who, due to arthritis in her fingers, cannot operate her existing controls.

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