

Providing Exercise, Health & Hope for People with Paralysis



*Washington State's premier
intensive exercise center
focused on regaining
function in those paralyzed
due to illness, injury or other
neurological disorders.*

Who We Are

Pushing Boundaries is a non-profit 501(c)(3) organization located in Redmond, Washington, providing intensive exercise therapy that strengthens and supports people living with paralysis, and their families, to maximize health and improve quality of life. Founded in 2005, Pushing Boundaries is **Washington State's premier intensive exercise-based therapy center** focused on regaining function and independence for those paralyzed due to illness, injury or other neurological disorders.

Scope of the Problem

The rehabilitation of neurological disorders includes short- and long-term treatment goals and requires the expertise of many skilled professionals. The standard model of care provided by insurance for a patient who has experienced a spinal cord injury is much different today than it was 40 years ago. A patient in the 1970's could be in the hospital post injury for at least 4-6 months, followed by two (2) years of daily intensive physical therapy. Today, a patient is discharged after 6-8 weeks, and receives an average of 13-15 physical therapy sessions.

Physical therapy and occupational therapy are critical elements of the rehabilitation program that helps the patient learn the immediate skills needed to be safe in their new environment or to reduce further complications related to their condition. **Exercise therapy** is the next step of the rehabilitation puzzle that addresses the recovery of function above and beyond what is currently addressed in the insurance-based therapy model.

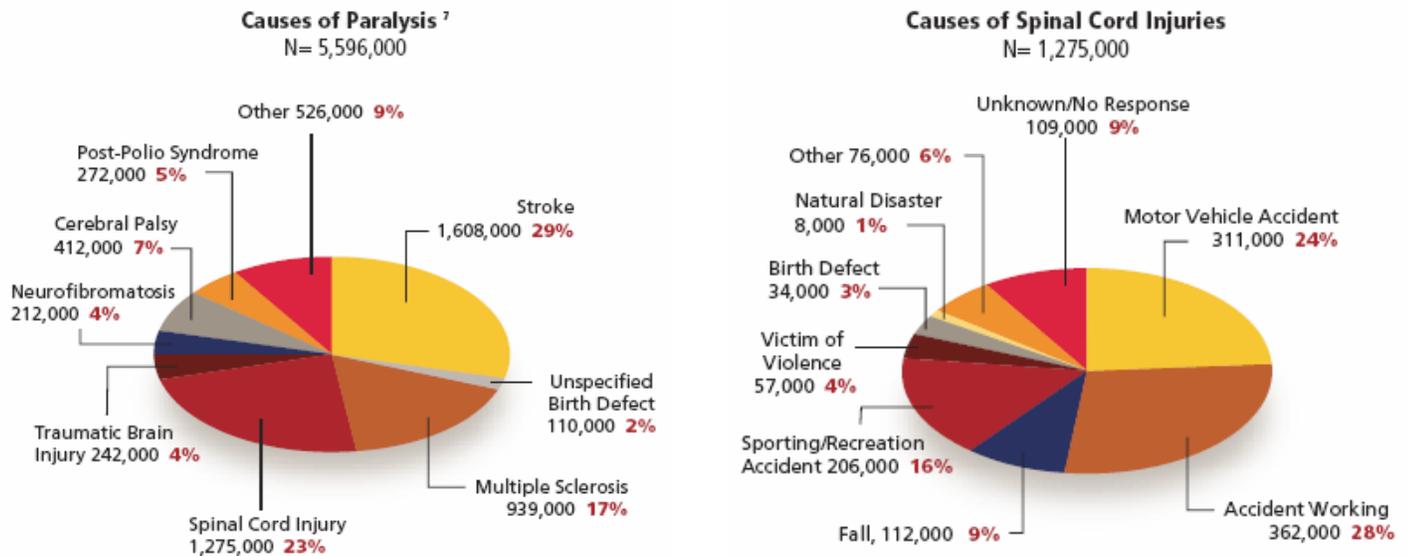
More than 40 percent of Americans are living with some form of paralysis, whether caused by disease, spinal cord injury or neurological damage.¹ It is estimated that the annual incidence of spinal cord injury (SCI) in the U.S. is 12,000 new cases.² Muscular Sclerosis (MS) is more prevalent than almost anywhere else on earth.³

¹ Christopher & Dana Reeve Foundation Paralysis Study 2009

² Spinal Cord Injury Facts and Figures at a Glance, 2013, <https://www.nscisc.uab.edu>

³ National MS Society, Greater Northwest Chapter, Chapter Brochure

Paralysis Population Survey Shows Over a Million More Paralyzed Than Previously Estimated; Five Times More People Live With Spinal Cord Injury



Major Findings

Prevalence

- More than 40 percent of Americans live with paralysis and over five times the number of Americans live with spinal cord injury than was previously estimated.
- One in 50 Americans is living with some form of paralysis, whether caused by disease, spinal cord injury or neurological damage.

Causes of Paralysis and Spinal Cord Injury

- The leading cause of paralysis was **stroke** (29%), **spinal cord injury** (23%) and **multiple sclerosis** (17%).
- Accidents while **working** (28%), **motor vehicle accidents** (24%) and **sporting/recreation accidents** (16%) were the leading causes of spinal cord injury.

To read the complete survey announcement from the Christopher & Dana Reeve Foundation, please go to <http://www.christopherreeve.org/site/apps/nlnet/content2.aspx?c=ddJFKRNoFiG&b=4455033&ct=6928829> or google "reeve foundation paralysis study 2009"

Why We Exist

In November of 2001, Bellevue resident Allan Northrup sustained a C7-T1 spinal cord injury in an automobile accident on Snoqualmie Pass. After just eight short weeks in intensive care, he returned home to find no resources available to assist with his recovery. He and his wife Sharon decided to travel 2000 miles away in order to participate in what was at the time, the only spinal cord injury exercise based program available. For two years Allan and Sharon pieced together a comprehensive program, travelling throughout Southern California every day to find intensive exercise, electro stimulation and aqua therapy. Upon their return to Washington in 2004, Allan and Sharon founded Pushing Boundaries, combining state of the art technology, equipment and professionals to deliver aggressive, long term recovery therapy to those with paralysis in the Northwest.

What We Do

Previously, people with paralysis were determined to be beyond the help of "physical exercise" because of their limited mobility resulting from their injury. Pushing Boundaries provides intensive, highly repetitive **exercise-based** therapy, allowing an individual to take control of their rehabilitation and removing the time limits usually imposed by our current insurance based healthcare system. Pushing Boundaries gives them the opportunity to increase strength, function and independence while sharing ideas and camaraderie with others who are in similar situations.

Exercise therapy (not to be confused with physical therapy) is the next step in the process of recovery of function. Physical therapy for the paralyzed individual focuses on teaching the critical skills needed to move safely in the environment they now find themselves in. Exercise therapy focuses on recovery of function. Nationally certified Exercise Therapists work one-on-one with each client, designing individualized programs to achieve optimum fitness. Clients participate in multiple hour sessions several times per week for as long as they wish to attend. The more time clients participate in intensive, full body exercise, the more strength and independence they see.

Clientele range in age from 6 to 80 and include those with Spinal Cord Injury (SCI), Traumatic Brain Injury (TBI), Stroke, Multiple Sclerosis (MS), Spinal Muscular Atrophy, Devic's, and other neurological conditions resulting in paralysis. Word of this unique program has spread, allowing Pushing Boundaries to provide services within their facility to clients travelling from as far away as California, Alaska and Colorado.

The Pushing Boundaries Training System is individualized to meet each client's needs and goals and is designed to incrementally reeducate damaged nervous systems to regain movement, increase function and independence, and ultimately improve the lives of those living with paralysis. Employing scientifically substantiated techniques and protocols based from well-established Exercise Science principles, Pushing Boundaries' goal is to achieve "recovery of physical function".

As with any exercise based program, traditional insurance rarely covers exercise. Therefore, clients of Pushing Boundaries pay for their therapy out of pocket. Community outreach and fundraising is critical to ensure the costs associated with recovery of function are as low as possible.

Successes

Since opening, hundreds of people from the greater Pacific Northwest region have benefited from both the intensive exercise therapy and the paralysis support center which is available for caregivers and any person living with paralysis.

At Pushing Boundaries, professional and highly trained staff have a variety of resources that can be utilized to meet each client's individual needs and goals. Pushing Boundaries provides a comprehensive gait training program, which includes both manual and robotic weight bearing systems. It is the only facility in the Pacific Northwest that has the [Lokomat](#) robotic gait training system **available to the general public**. Robotic gait training is designed to provide highly intensive, consistently repetitive, and individualized training that also provides constant feedback to the therapist and the client with neurological movement disorders. Pushing Boundaries clients have logged more miles on this machine than any other machine that the maker ([Hocoma](#), a Swiss based medical technology company) currently has in operation – anywhere in the world.

Pushing Boundaries also has an extensive electrical simulation program that includes upper and lower extremity cycling. Functional Electrical Stimulation (FES) is a rehabilitation technique that involves using controlled pulses of electrical current to stimulate peripheral nerves, creating muscle contractions and evoking patterned movement in the arms, legs and core. FES was designed to help people with neurological disorders achieve their full potential.⁴ Pushing Boundaries has partnered with [Restorative Therapies](#) as a testing center for the [RT300 Leg & Arm](#).

⁴ Restorative Therapies, <http://www.restorative-therapies.com>

Our Team

The Pushing Boundaries team consists of passionate, experienced and talented exercise therapists, management, and development professionals committed to the progress and goals of every client.

Exercise Therapists

Exercise Therapists provide services that encourage the restoration of function, improve mobility, and increase independence of clients with injuries or disease resulting in paralysis. They restore, maintain, and promote overall fitness and health. Their clients include accident victims and individuals with disabling conditions such as SCI, TBI, Stroke, MS, and other neurological conditions.

Exercise Therapists examine clients' medical histories and then test and measure the clients' strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. Next Exercise Therapists develop exercise-based plans describing a treatment strategy and its anticipated outcome.

Treatment includes exercise, especially for clients who have been immobilized or who lack flexibility, strength, or endurance. Exercise Therapists encourage clients to use their muscles to increase their flexibility and range of motion and utilize advanced exercise techniques to focus on improving strength, balance, coordination and endurance of affected musculature. The goal is to improve and or recover as much function as possible.

Exercise Therapists education includes a Bachelor's degree in Exercise Science, Athletic Training, or another Exercise-based degree. They are also **required** to be nationally certified with a top accredited exercise science based organization. Preferred organizations are the American College of Sports Medicine (ACSM) or the National Strength and Conditioning Association (NSCA). Exercise therapist education programs start with basic science courses such as biology, chemistry and physics and then introduce specialized courses, including biomechanics, kinesiology, anatomy, physiology, sports medicine, neuro-anatomy, human growth and development, exercise prescription, motor control and learning, and sports psychology. Besides getting classroom and laboratory instruction, students receive supervised clinical experience.

Licensing and Credentials

Exercise Therapists are **required** to gain additional training and certification to work specifically with people with disabilities. ACSM's Certified Inclusive Fitness Trainer (ACSM-CIFT) provides the additional certification needed to maintain credentials. All Exercise Therapists have an NPI number and it may be provided upon request.

Meet Greg



Greg and his wife and their two girls were eagerly anticipating the arrival of their third child – a boy, who was due in January 2012. Three days after celebrating his 37th birthday, he climbed a step ladder to change a light bulb in an upstairs play room. His daughter was in the room with him and saw him fall backwards. In the minutes that followed until the aid unit arrived, his wife had to resuscitate him several times.

As a result of the impact of the fall on an old 2003 injury, Greg sustained a C4-5 & 7 spinal cord injury (SCI). While he was in the ICU, he constantly surprised nurses with his up-beat attitude and sense of humor. The same day that he was released from the hospital, he visited Pushing Boundaries – at his family’s urging. The next day his son was born.

Twelve (12) days later he started therapy with us. At that time he had zero movement in his legs and feet, no core strength, and the left side of his upper body was much stronger than his right. He started with 2 per week therapy program and started to see small improvements. Then he bumped up to 3 a week and right away decided to move to 4 a week sessions.

Less than a year after starting his therapy program at Pushing Boundaries, Greg’s intensive regime has paid off! He is able to walk with a walker and is focusing on permanently leaving his wheelchair behind. He is also working on increasing his proficiency on the stairs. His next goal is regaining the ability to drive.

Greg lives in Olympia and has transitioned to the next phase of his recovery - applying the exercise techniques he learned at Pushing Boundaries in his own home.



Meet Summer



Summer was a normal, bubbly 13 year old girl who loved roller skating and hanging out with her friends. Her world changed forever in the blink of an eye one summer day while swimming on the family's property. Summer had a near drowning accident and as a result suffered a traumatic brain injury. From the day of the accident to the day she came to Pushing Boundaries 6 1/2 years later, it has been an intense, and sometimes scary, struggle for Summer and her family.

Summer is now 21 years old and, according to her step-mother Nancy, has gotten a lot stronger and is sleeping and eating better. Although her traumatic brain injury as affected her ability to

speaking, Summer's infectious smile lets everyone know that she is happy to be at Pushing Boundaries.