YOUR GUIDE TO THE FUTURE OF REHABILITATION

RoboFit is an exercise and rehabilitation clinic specialising in a range of services targeted at those living with neurological conditions or other neurological or musculoskeletal conditions including:

+ **Spinal Cord Injury**

+ **Brain Injury**

+ **Parkinson's Disease**

+ **Multiple Sclerosis**

+ **Stroke**

Leading the charge on our mission to improve lives is our team of neuro-controlled exoskeleton certified trainers.

ROBOFIT

Combining neuroscience and cutting edge wearable technology, the HAL exoskeleton can be used to remap neural pathways and allow the wearer to achieve what was previously unthinkable, offering hope to those living with debilitating injuries.

MEET HAL

Developed in Japan by Cyberdyne, HAL (Hybrid Assistive Limb), is the world's first neuro controlled exoskeleton, primarily used to train, support and enhance the wearer's strength.

Using electrodes, HAL reads the wearer's bioelectric signals, interpreting the wearer's movement intention and working with them to complete movements. HAL training is an intensive program that aims to maximise recovery potential and promote neuroplasticity, ultimately improving the wearer's quality of life and independence.

BENEFITS OF HAL

The benefits of the HAL exoskeleton are numerous and far reaching. From a rehabilitation perspective, specifically when looking at walking, standing and balance related outcomes, benefits from using the HAL exoskeleton include:

+ **Increased walking speed and endurance**
+ **Improvements in balance resulting in a reduced falls risk**
+ **Improvements in general mobility at home and in the community**
+ **Improvements in posture**
+ **Increases in lower limb strength**

It has many positive health related outcomes outside of its rehabilitation focus. These include:

+ **Increased blood flow**
+ **Maintenance of bone density**
+ **Maintenance of joint ranges of motion**
+ **Improved bowel and bladder function**
+ **Improvements in cardiovascular health**
+ **Improved mental health and well-being**

Because the HAL exoskeleton is capable of driving neuroplasticity within the body's nervous system, we can often see these results occurring in clients well beyond the "recovery phase" of injury.

For optimal results research suggests block training around functional movement goals and strength and conditioning for high intensity and aerobic training.

WHO IS HAL FOR?

HAL is a rehabilitative device designed for those living with neurological conditions such as spinal cord injury, stroke, traumatic brain injury and many others. It has also been used as a falls prevention device for the elderly.

The HAL exoskeleton is just one of the tools at the hand of RoboFit's therapists to help deliver results. Most importantly, and from a therapeutic perspective, is the incorporation of goal based, task specific training within the training program. Our RoboFit team will work with you to develop a plan based on your goals.

We work with clients across different funding schemes such as NDIS, DVA, iCare, Workers Compensation, Aged Care and privately funded individuals.

Due to the size of the device and the motors within it, all prospective clients must fit within the recommended guidelines of body dimension and size.

HOW HAL WORKS

HAL training is an intensive program that aims to maximise your recovery potential and promote neuroplasticity, ultimately improving your quality of life and independence.

STEP 1: THINK
First, the wearer tries to perform a movement. When this happens, the brain sends signals to the desired muscle group, telling it to act.

STEP 2: SEND
Receiving the signals, the muscles attempt to move. In normal circumstances, this is where the muscle acts with the intended strength and speed.

STEP 3: READ
Using electrodes, HAL reads the bioelectric signals sent by the brain and determines what movement the wearer intends to perform.

STEP 4: MOVE
In accordance with the recognised motions, HAL distributes power to the exoskeleton, providing the wearer with the required assistance to complete the action as normal.

STEP 5: FEEDBACK
Performing the motions with HAL stimulates neuroplasticity, developing new neural pathways and improving long term motor function.

MEASURABLE IMPACT

DAN'S STATS, aged 33

Dan had a spinal cord injury in 2010. In June 2021, he began an eight week block training program at RoboFit, training five days a week. By week four, Dan's baseline six minute walking distance doubled from 75 metres to 150 metres, and then increased by a further 20% in week eight to 180 metres.

		Baseline	Week 4 assessment	Week 8 assessment
6 minute walk test	with assists	75.4m	150m	180m
	without assists		72.14m	77.7m
10 meter walk test	with assists	23s 19 steps	13.62s 15 steps	17.54s 17 steps
	without assists		24.96s 20 steps	29.34s 21 steps
Spinal Cord Independence measure^		58	61	61
WISCI II*		8	13	13

^Spinal Cord Independence Measure is measured from 0-100 across three categories: self-care (0-20), Respiration and Sphincter (0-40) and Mobility (0-40).
*WISCI II is a tool to measure walking ability for those with a spinal cord injury, ranging from 0-20. A score of 20 represents independent ambulation.

Over a 4 week block period, Dan's 6 minute walking test distance doubled from 75m to 150m

MEET ELIO, aged 64

"I had a massive cerebellum stroke 5.5 years ago, on both sides. I saw RoboFit on the news, and I knew that I wanted to give it a go, so I travelled from Melbourne to Wollongong to try it out. I was a bit dubious about my first appointment, as I'd previously tried everything to get to my main goal of walking unaided, but Kieran, RoboFit's exercise physiologist, was great and helped me every step of the way. He made me feel comfortable and talked me through everything."

"I found the exoskeleton to be extremely helpful in helping me achieve my goals of walking and normal gait, it's really made a difference. Definitely give it a go, it works and it's very beneficial. I can't wait to go back."

NEVER SAY NEVER

ADDITIONAL TECHNOLOGY

The Cyberdyne single joint and lumbar devices are sibling devices to the HAL exoskeleton, using the same EMG technology in a targeted manner.

The single joint device can be applied to the knee and elbow joint and primarily focuses on the flexor and extensor muscle groups of each joint. The lumbar support device is worn around the pelvis and has a range of purposes depending on the population being targeted.

Similarly to the HAL, they can be used by those with neurological disorders to deliver optimised functional outcomes and enhance independence, but there are also a variety of other possible uses, including but not limited to:

Elderly

+ Falls prevention and isolated muscle strengthening

Musculoskeletal support

+ Isolated muscle strengthening
+ Reduced strain on the injured muscle i.e. using lumbar support device to reduce strain on the lower back

The workplace

+ Heavy industry to reduce instance of lower back injuries
+ Improve efficiency and reduce fatigue
+ Return to work programs following injury

Orthopedics

+ Isolated knee strengthening and stability programs following knee operations

Lumbar and single joint supports can be accessed within goal specific training. See our packages information overpage.

LUMBAR SUPPORTS   **SINGLE JOINT SUPPORTS**