

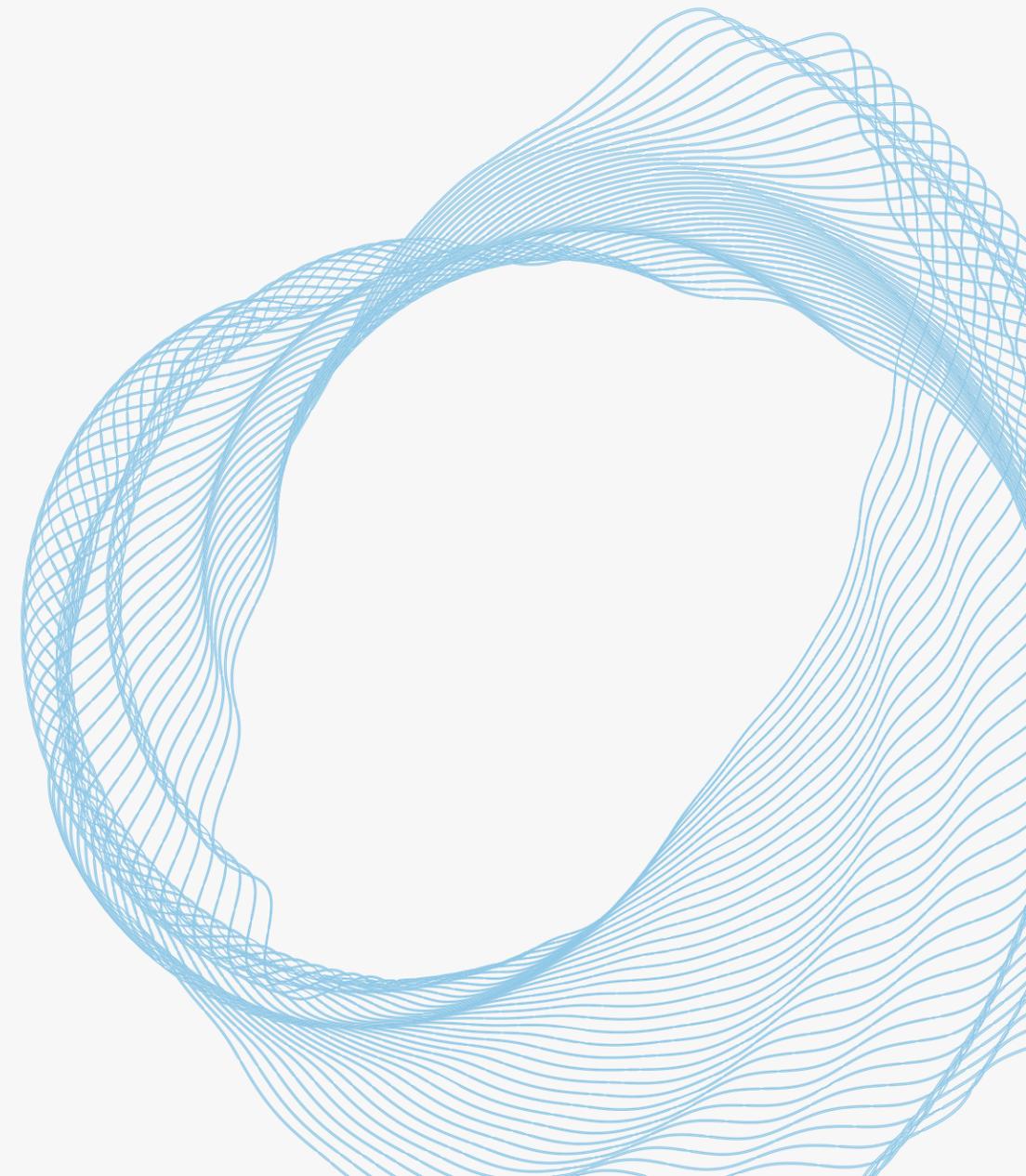
Fourier Intelligence Rehabilitation Hub

Empowering
You

China / Singapore / Malaysia / the United States / Australia / Germany



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www.ftai.com





Fourier Intelligence Group /

- Fourier Intelligence is headquartered in Zhangjiang, Shanghai. It also has branches in Guangzhou, Zhuhai, Singapore, Malaysia, Australia, U.S.A and Germany.
- Provides comprehensive rehabilitation solutions with cutting-edge intelligent robotics technology. Make rehabilitation robotics accessible and affordable.
- Its robotics have entered more than 20 countries and developed collaborations.
- Acquired registrations such as FDA, CE, CFDA, TGA and HSA.
- Secured the financing from top-tier investors including IDG Capital, Volcanics Venture, Zhangjiang Technology Venture Capital and Guozhong Venture Capital.
- Fourier Intelligence's products have been installed in nearly 1000 institutions and hospitals worldwide and have completed 400 million repetitions in total.

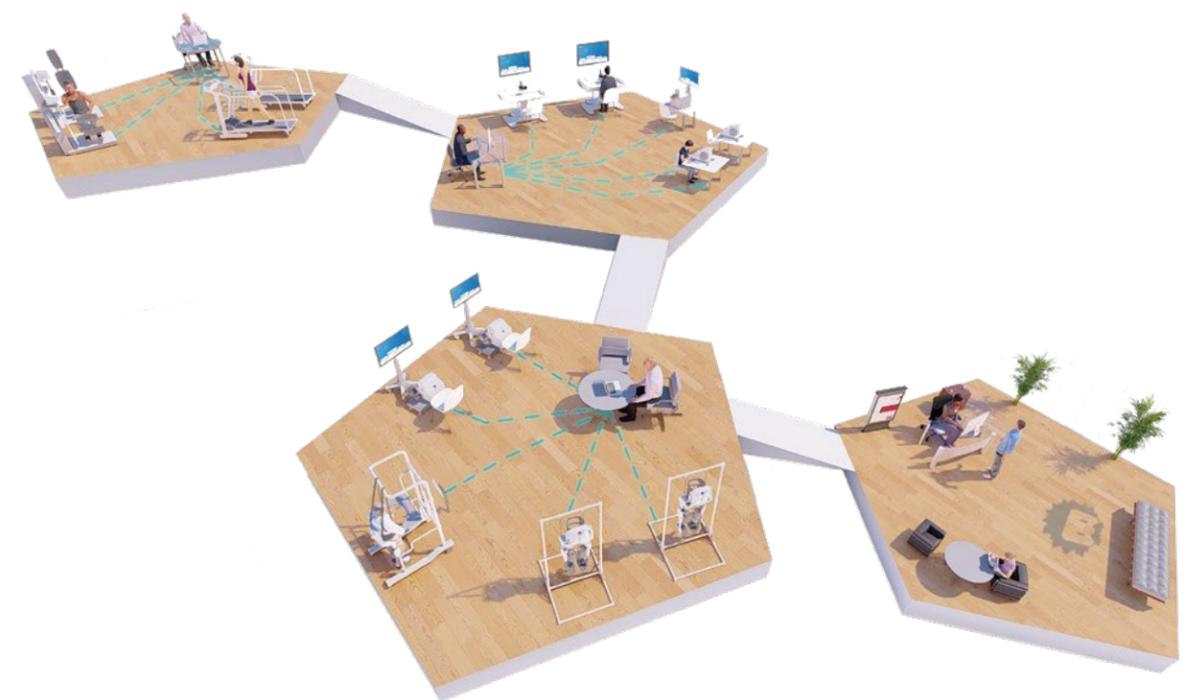


Fourier Intelligence forms joint-labs with top research institutes in the world, including the University of Melbourne, Shirley Ryan Ability Lab, Imperial College of London, ETH Zurich, etc. Besides, it also does academic exchange and research collaboration with more than 100 top hospitals and rehabilitation centres worldwide to share resources and cultivate talents for rehabilitation medicine and engineering fields.

Fourier Intelligence Rehabilitation Hub /

Fourier Intelligence Rehabilitation Hub is built on top of the intelligent robotics technologies, providing an all in one rehabilitation solution and network between devices, users and institutions.

Fourier Intelligence Rehabilitation Hub equips with all the device from the Motus™ series, which provides a comprehensive rehabilitation solution including upper limb, lower limb, ankle, wrist, hand, etc. These devices will not only cover the diverse training needs of patients from different stages but also make the rehabilitation training quantifiable, fun and motivating. Fourier Intelligence Rehabilitation Hub allows an institution to standardise services, improve technologies, modernise business and eventually drive the whole industry by setting a new benchmark.



Motus™ Series Fourier Intelligence Rehabilitation Robotics

Fourier Intelligence Motus™ series comprises of different rehabilitation robotics designated for upper limb, wrist joint, ankle joint, hand, and lower limb training. These robotics complement each other and offers a complete solution to a rehabilitation centre so that it can improve efficiency by replacing the labour extensive manual therapy. One therapist can now monitor multiple patients at the same time as all the devices are linked, replacing the traditional one to one training.

Cover the Whole Continuum of Rehabilitation

Provide assistance according to different training requirements, user's muscle power and conditions.

Abundant Therapies

Professional and personalised therapy including motor control, muscle strength and cognitive training.

Digitised Training

Analyse every movement precisely and generate a report after training.

Quick Setup

User-friendly design requires only 1 minute to set up and efficient enough to train 15 patients daily.

World Leading Force Feedback Technology Fulfil the Requirement of Different Rehabilitation Stages

Force feedback is one of the core technologies implemented in the Motus™ series robotics. The in-house developed force feedback algorithm and motor is able to mimic a therapist hand in the manual therapy. When a user is too weak to complete the movement during the early stage, the robot will provide "assistance as needed" hence guiding the user to achieve correct motion at the same time ensuring their participation. When the user gradually regains the strength, the robot will lower its assistance or provide resistance instead. Force feedback technology allows the robotics to diversify training outcomes while the system can precisely analyse every movement, thus fulfilling the requirement of the middle late stage.



Passive Mode

(0 MMT Score)

Create conscious linkage



Assistive Mode

(1-2 MMT Score)

Induce active participation



Active Mode

(3 MMT Score)

Optimise motor control



Resistance Mode

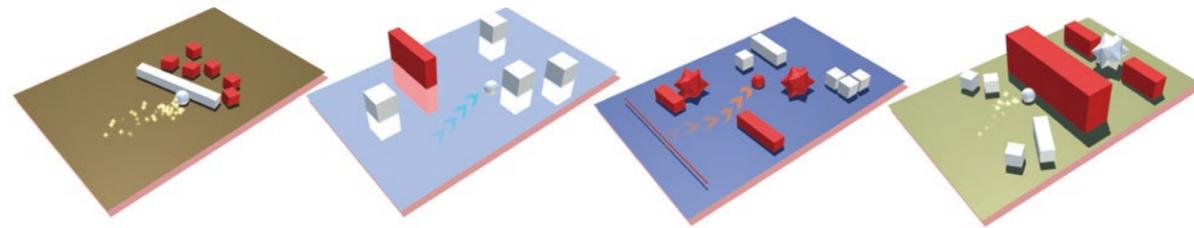
(4-5 MMT Score)

Improve muscle power



Immersive Interactive Experience

The in-house developed main motion control unit (MMU) is integrated into every device in the Motus™ series, allowing them to mimic different resistance, inertia, elasticity and obstacles. The realistic training scenario, combining visual, audio and kinesthetic inputs, escalates user experience to the next level.



Resistance (Muddy surface)

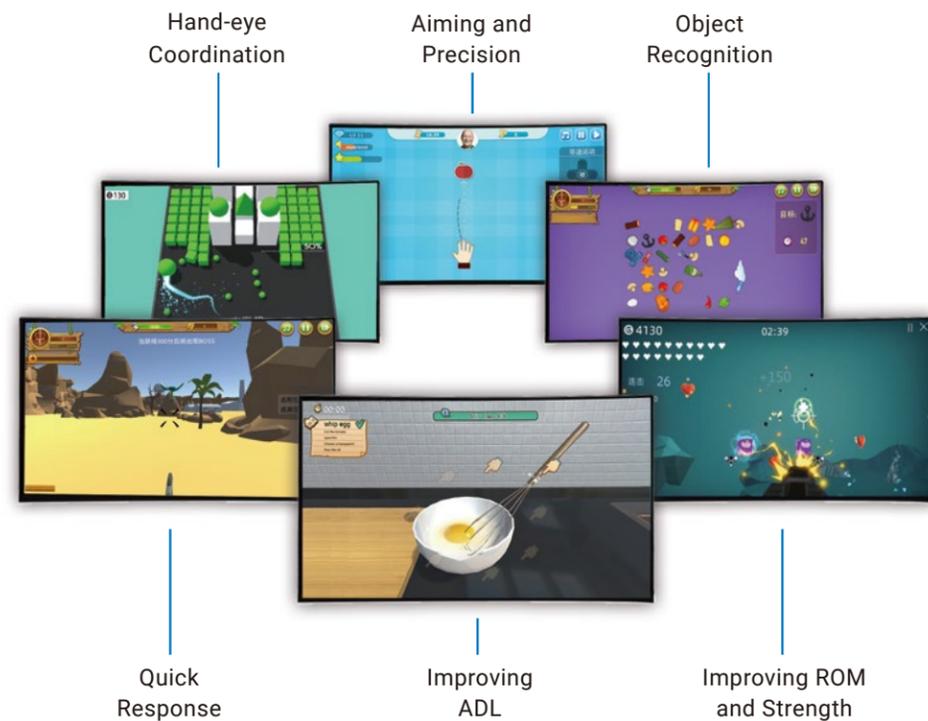
Inertia (Ice surface)

Elasticity

Obstacle



All the training modes come with different gaming scenarios that can motivate the active participation of the user. The stereotype of rehabilitation procedure being boring can now be overcome when the user can complete a professional rehabilitation through gaming.



Measurable Training

Let the numbers do the talking

Fourier Intelligence's robotics are integrated with force sensor and position sensor to measure every movement precisely. The device can measure a user's performance from multiple prospects, including the range of motion (ROM), strength, cognition, response time, etc. All of these analysis and training reports should be taken into account to ensure better training outcome.

Motus™ series robots will recommend training parameters based on user's assessment and passed training performance. The auto-generated training reports provide measurable results for the user's reference.



ArmMotus™ M2 Pro

Upper Limb Rehabilitation Robotics

ArmMotus™ M2 is the core product of the Motus™ series. It acquires all the Fourier Intelligence's core technology that ensures excellent user experience. ArmMotus™ M2 covers the whole continuum of rehabilitation by providing abundant training scenarios. It is simple to operate and cost-effective, therefore suitable for any hospital and rehabilitation centre environment.



ArmMotus™ M2 Pro



ArmMotus™ M2 Gen



ArmMotus™ M2 Kids



ArmMotus™ M2 Plus



Multifunctionality

The multifunctional advantage of ArmMotus™ M2 allows it to achieve limitless possibility in training. For example, combining motor control with cognitive training; isometric strength with dynamic strength training; single joint training with activities of daily living (ADL) training; unilateral with bilateral arm training.



Motor control training

Improve motor control ability through targeted training.



Cognitive training

Improve user's cognition with perception, attention, memory training.



Isometric training

Induce power from early stage through isometric training.



Dynamic training

Improve user's cognition with perception, attention, memory training.



Single joint training

Improve the ROM of the user's scapula, shoulder joint and elbow joint through muscle tension control training.



Compound functional training

Improve the balance function with ADL training.



Unilateral training

Train with one arm by holding onto cylindrical or ball handle.

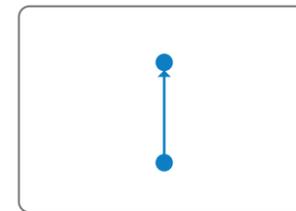
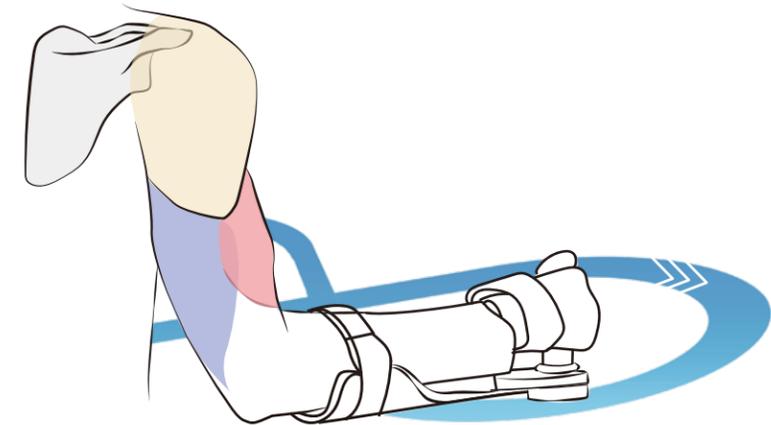


Bilateral training

Train with two arms by holding onto the handle.

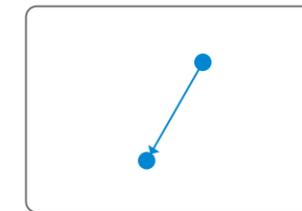
Personalised Therapy

ArmMotus™ M2 provides abundant therapies for upper limb functions. A therapist can tailor a targeted therapy according to the patient's training outcomes and needs by customising the training trajectory.



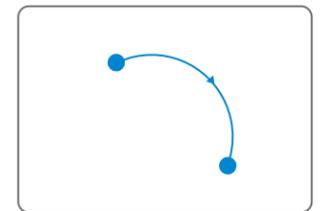
Protraction and Retraction of Scapula

Early prevention of abnormal movement patterns



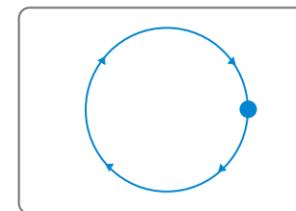
Flexion and Extension of Elbow Joint

Improve ADL movement



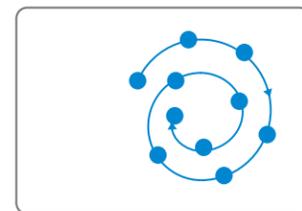
Internal and External Rotation of Shoulder Joint

Overcome synergistic movement



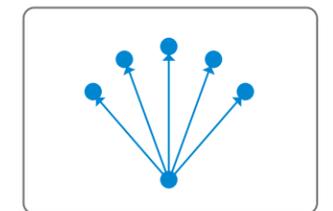
Range of Motion Training

Improve the ROM



Unilateral Neglect Training

Increase the sensory input from the neglected side



Balance Training

Improve balance during sitting and standing

At Your Service

Helping a therapist to complete 1 million repetitions per year.

20-30

Repetitions per minute

500

Repetitions per 20 minutes

5000

Repetitions per day

1million

Repetitions per year

“The M2 by Fourier Intelligence is one of the robotics devices we use in the neuro-rehabilitation program at Barrow Neurological Institute. This device provides the therapists with an intuitive person machine interface to deliver therapeutic tasks in with minimal set up time which allows for more time to deliver an efficient patient treatment .”

—Trent Maruyama, Program Manager for Rehabilitation Technology,
Barrow Neurological Institute, USA

“It has been fantastic having the Fourier M2 robot at Hobbs, we have all enjoyed using this piece of technology with our patients as part of their inpatient and outpatient therapy programmes.”

—Joe Green, Technology Lead, Hobbs Rehabilitation, UK





AnkleMotus™ M1-A Ankle Joint Rehabilitation Robotics

AnkleMotus™ targets on the rehabilitation of the ankle joint. It is designed based on the motion pattern of the ankle. It focuses on lower limb muscle strengthening, induces neuroplasticity for the muscle group involved in walking, hence regaining the ability.



Stretching

Ankle joint stretching to improve soft tissue tension



ROM Training

Improve the ROM of the ankle joint with different training modes



Motor Control Training

Improve motor control ability through targeted training



Strength Training

Simulating different resistance in the ADL to improve muscle strength

WristMotus™ M1-W

Wrist Joint Rehabilitation Robotics

WristMotus™ targets on wrist functions by providing training that mimic ADL. For example, forearm pronation and supination, ulnar and radial deviation, flexion and extension. It complements with ArmMotus™ and HandyRehab™, offering a complete solution for the upper limb.



Accessories for Different Functions

The variety of accessories can meet different requirements of the patients. A therapist can select a suitable accessory according to user's need and training outcome.



- ① Wrist flexion and extension
- ② Doorknob
- ③ Radial and ulnar deviation
- ④ Knob turning
- ⑤ Forearm pronation and supination





ExoMotus™

Lower Limb Rehabilitation Robotics

ExoMotus™ is one of the products that target on lower limb rehabilitation. The biped robotic module design integrates with MMU, force sensors and powerful actuators. There are three versions of ExoMotus™ available, including medical version M4 for functional gait training, home version H4 for personalised walking assistance, research version EXOPS for research and development.



Various Training Available

Supports sit, stand and gait training.

User Friendly

The mechanical structure is designed based on ergonomics and able to execute a normal gait pattern.

Light and Compact

Only weigh 18kg as it is made of aluminium alloy and carbon fibre.

Wireless Control

Remotely control the robot with an external device provided by Fourier Intelligence.



Medical version M4

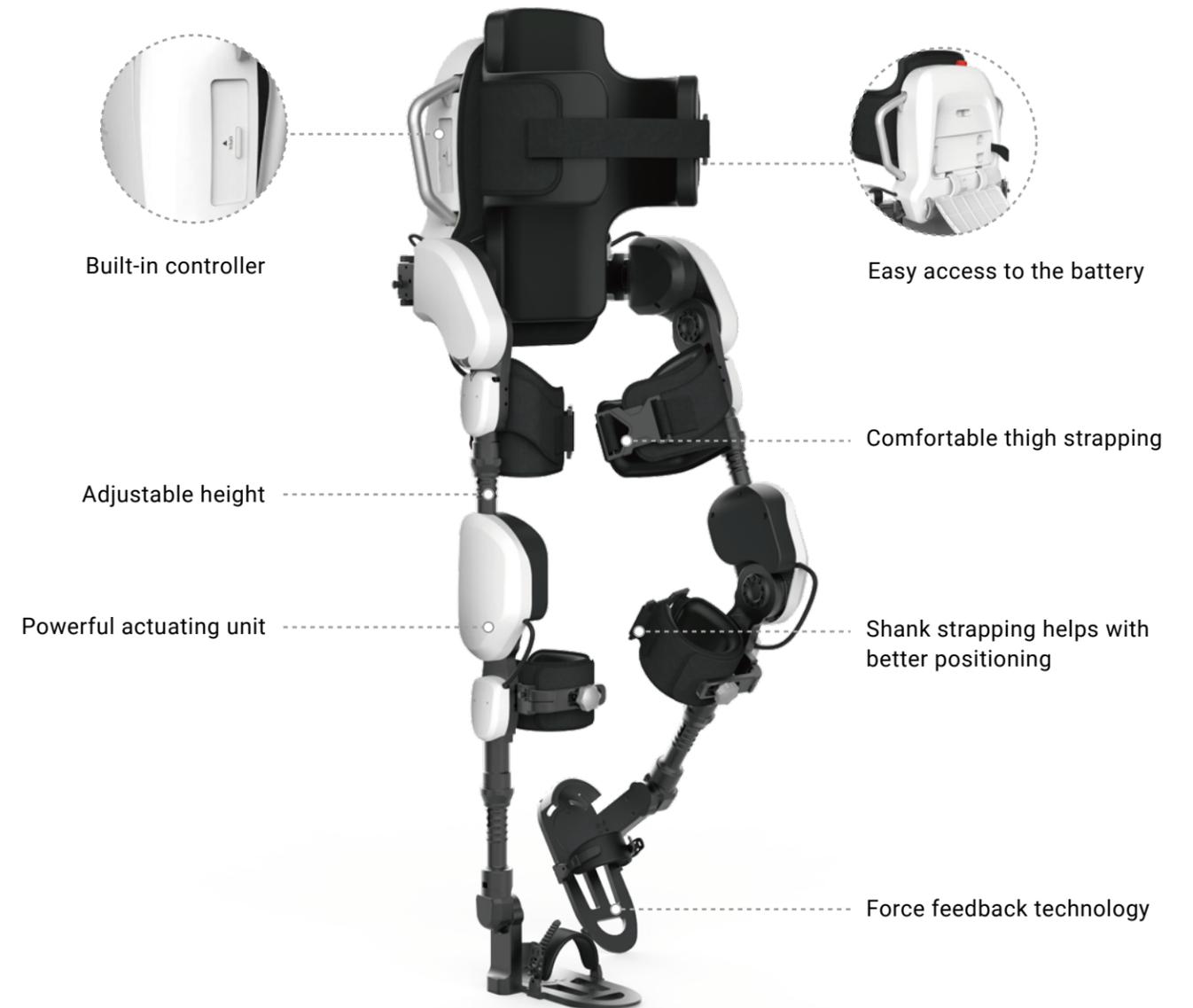


Home version H4



Research version EXOPS

All in One Design



ExoMotus™ H4

Lower Limb Rehabilitation Robotics- Home Version

ExoMotus™ H4 targets people with walking disabilities, especially spinal cord injury (SCI) patients. It provides walking assistance to the patient in daily life environment, thus improving their quality of life.

Wireless Control with a Smart Watch

ExoMotus™ can be remotely controlled by a smart watch. User can also adjust the gait parameters (stride length, height and speed) and the angle of hip and knee joint so that the device is customised to suit the user best.



Customisable Wireless Effortless

Powerful Actuating Unit

The actuator is compact, smooth and silent yet able to provide strong torque to simulate a human-like walking pattern.



EXOPS™

Exoskeleton & Robotics Open Platform System—Research Vision

EXOPS stands for Fourier Exoskeleton & Robotics Open Platform System. Together with National Instruments, we provide an open platform to educate, promote and accelerate the development of exoskeleton and robotics system for future meaningful real-life adoption.



Research



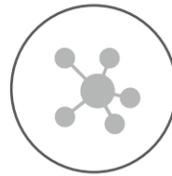
Assistive Technology



Rehab Training



Education



Augumentation



Industry



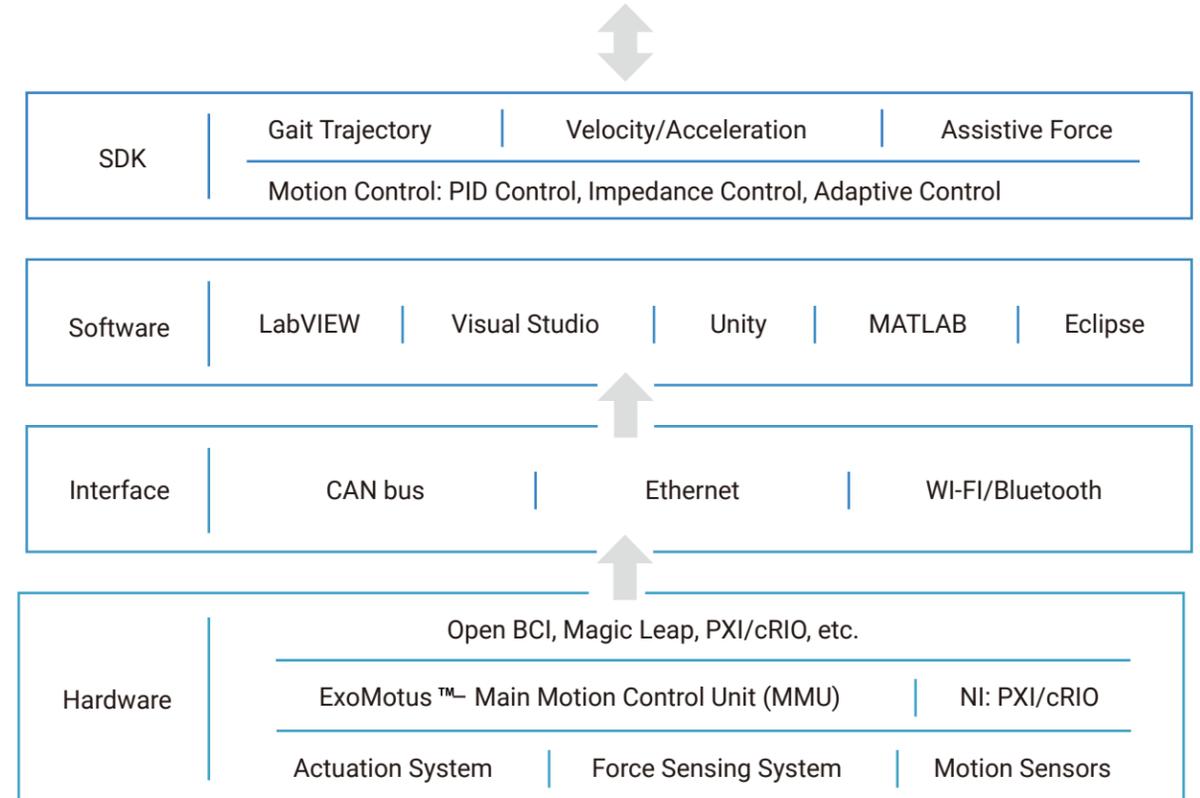
EEG Acquisition

AR Headset

ExoMotus™

EXOPS Software Framework

Applications (Walking Assistance, Rehab Training, Motor Enhancement)



ExoMotus™ M4 Plus

Lower Limb Rehabilitation Robotics- Medical Version

ExoMotus™ M4 Plus applies the integrated ergonomics design. It can provide the evaluation and rehabilitation training under the sitting, standing and walking modes. The lower limb exoskeleton together with weight support system can provide sit, stand and gait training at the early stage. This combination could effectively promote the lower limb motor function rehabilitation. It also provide the evaluation of balance function, which provides quantitative reference for lower limb rehabilitation.



Sit-stand training
Use the lower-limb exoskeleton to provide sit-stand assistive training

Balance training
Calculate the gravity center of the user in time to do the passive and active rehabilitation training

Walking training
Provide the walking training with the weight support system

ExoMotus™ M4 + GaitMotus™ iReGo

ExoMotus™ M4 is the combination of a lower limb exoskeleton and a weight support system. It provides an effective and reliable walking assistive training by providing gait guidance. It equips with real-time dynamic weight-supporting and various training scenarios. It satisfies different training demands and covers the whole continuum of rehabilitation. ExoMotus™ M4 could effectively accelerate the recovery process and improve the quality of life. Besides, its fall prevention feature ensures the safety of the user and relieves the labour intensive workload of a therapist hence improving the rehabilitation efficiency.



Cover the Whole Continuum of Rehabilitation
The combination of the intelligent weight support system and the exoskeleton is able to achieve gait training from early, to middle and later stages.

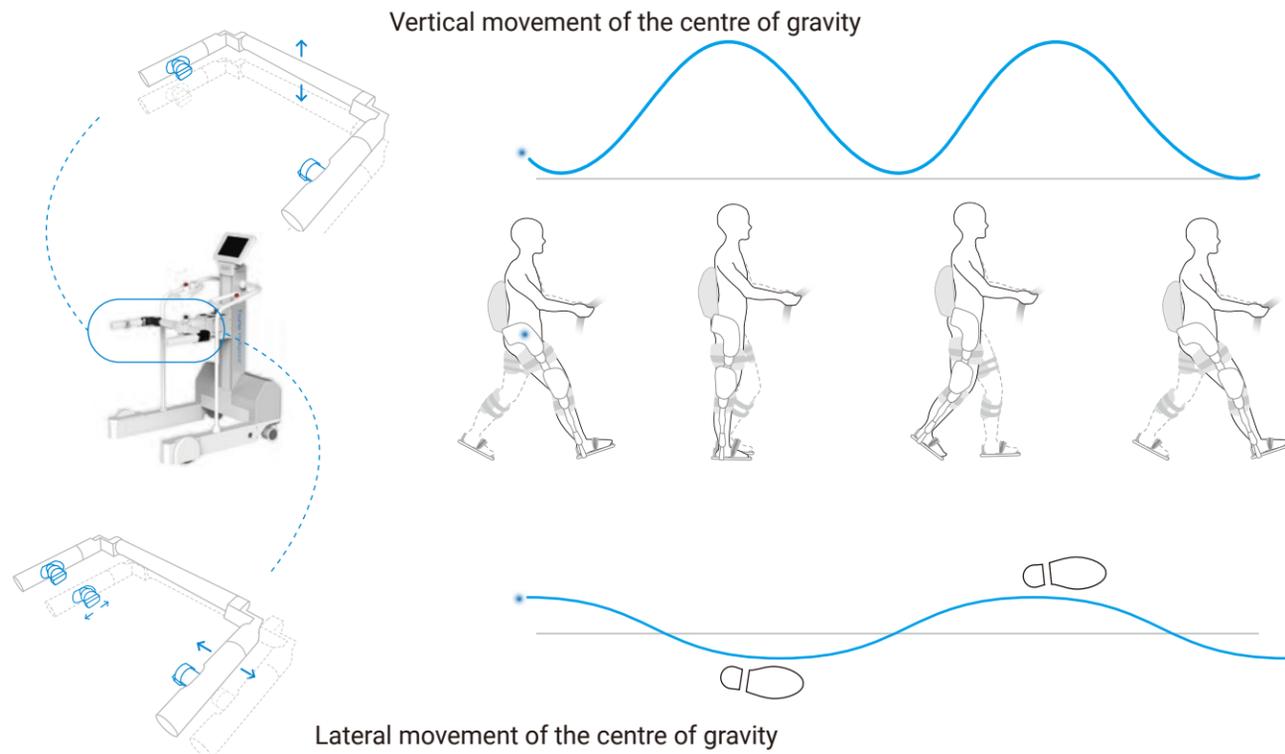
Various Application Scenarios
The intelligent weight support system and exoskeleton robotics can be combined, individually used or even integrated with a treadmill.

Cordless and Long Battery Life
Cordless design allows gait training without place restriction.

Adjustable Real-time Dynamic Weight Support
Provide real-time dynamic weight support according to the shifting of the user's centre of gravity.

Comprehensive Safety Protection
Various safety features such as emergency stop button, overload protection, fall prevention and multiple handrails feature.

Real-time Dynamic Weight Support System



ExoMotus™ M4 Plus
Lower limb rehabilitation robotics- Medical Version



ExoMotus™ M4 + GaitMotus™ iReGo

Multiple Training Scenarios



EXOPS™
Exoskeleton & Robotics Open Platform System—
Research Vision



ExoMotus™ H4
Lower Limb Rehabilitation Robotics- Home Version

HandyRehab™

Hand Function Rehabilitation Robotics

Fine finger motor skill training has always been the pain point of rehabilitation. HandyRehab™ equips with 8 individual motors which allow it to carry out complex hand function training.

The integration of EMG sensors can provide different training scenarios such as passive, active-assistive and bi-manual training.

HandyRehab™ only weighs 380g. It can support home use or even use as an assistive device to improve the quality of daily living.

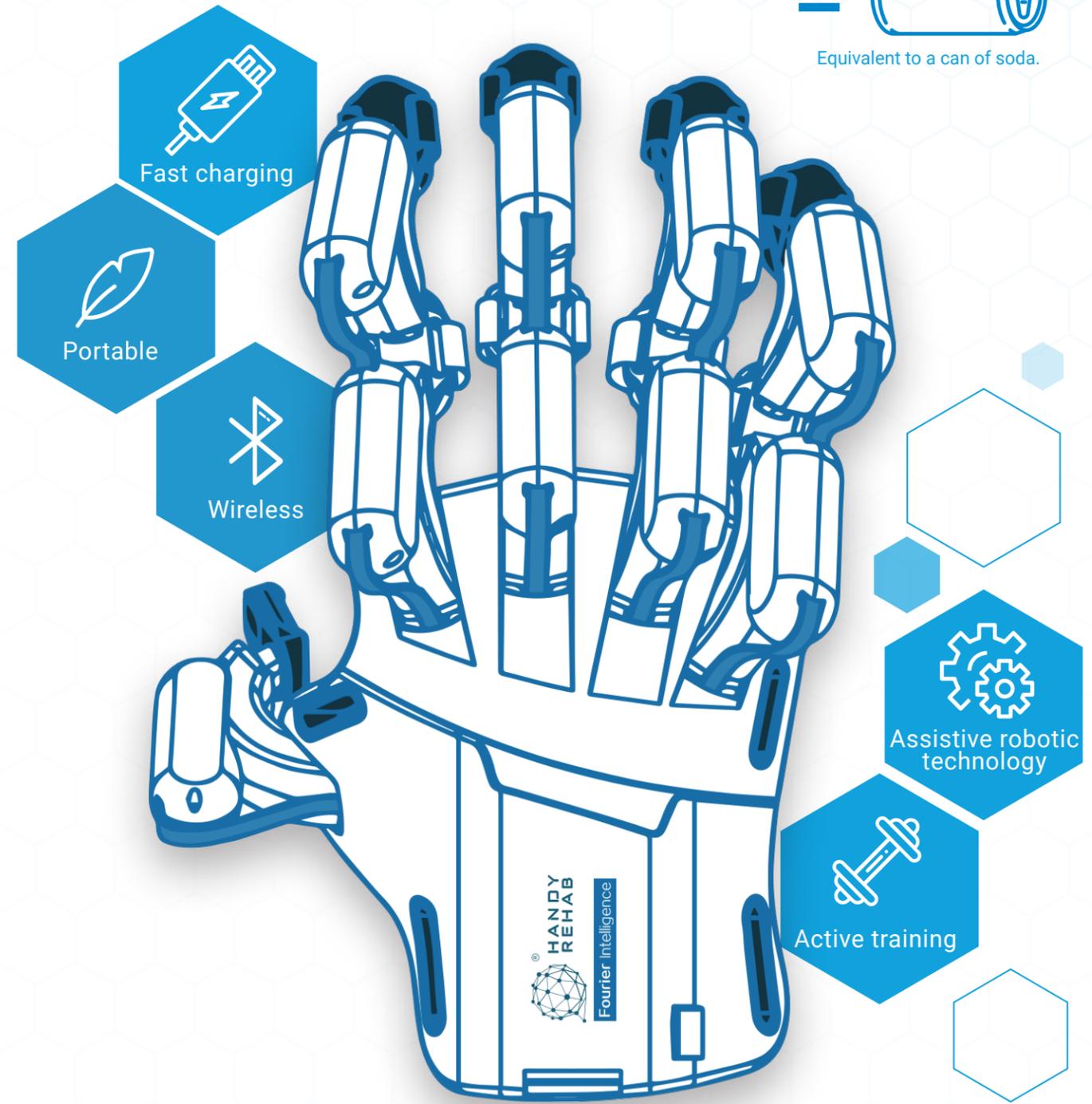


One of the World's Lightest Wireless Robotic Gloves

380g



Equivalent to a can of soda.



Various Training Modes

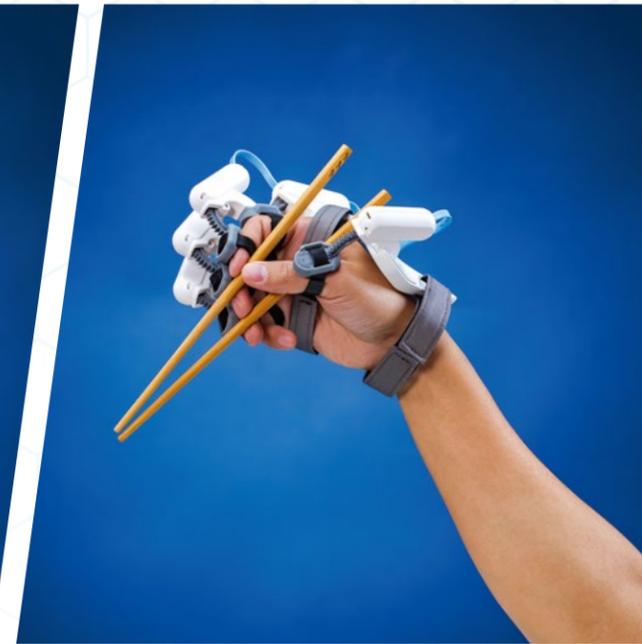
- Passive training
- Active-assistive training
- Image training



Different Types of Grips

HandyRehab™ can act as an assistive device that enables users to conduct training with day-to-day objects and tasks to restore their hand function.

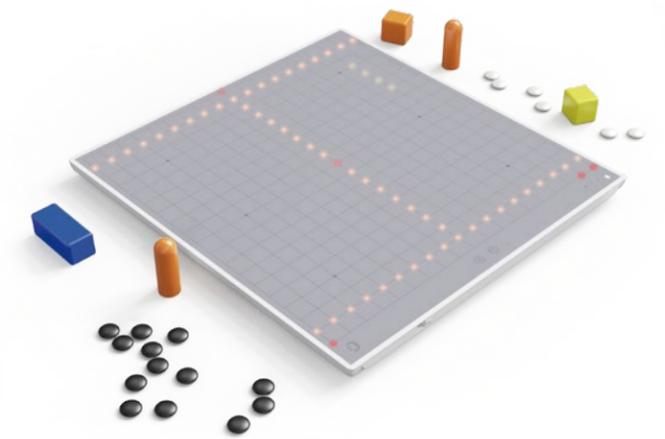
Human-computer Interactive Training





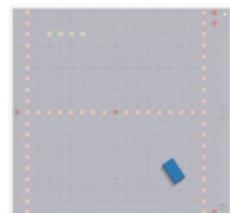
OTParvos™ Digital OT Training System

OTParvos™ provides a portable intelligent solution for occupational therapy through the electromagnetic sensor, LED array, dynamic control algorithm, and AI. It can help motivate users in training by a variety of accessories and games to improve the motor control ability of the upper limb, fine motor ability of fingers, hand-eye coordination, and cognitive ability.

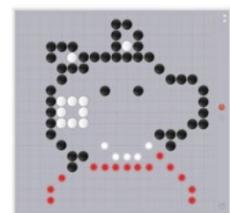


Multiple Training Types

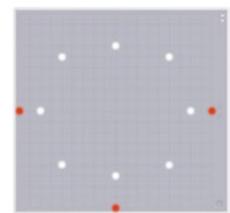
OTParvos™ provides an extensive library of interactive games, which engage users in gamification training to improve multiple motor and cognition functions.



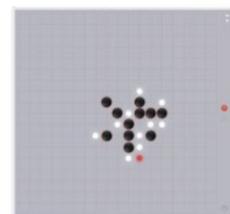
Pong
Improve hand-eye coordination and quick response-ability.



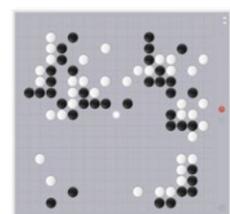
Puzzle
Practice attention, pattern recognition, and fine motor ability.



Trajectory
Improve motor control ability of upper limb based on task-oriented training.



Gomoku
Exercise upper limb movement ability and logical thinking.



Go Chess (Wei Qi)
Enhance cognitive strategy.

Various Accessories, Meet Various Training Needs

Besides the standard accessories, OTParvos™ can support daily equipment and traditional occupational training tools to be used as accessories by attaching the magnet to meet different hand function training needs.



Tip Pinch



Ball Grasp



Multiple-tip Pinch



Ball Pinch



Lateral Pinch



Cylindrical Grip



Blocks



Wood Stick



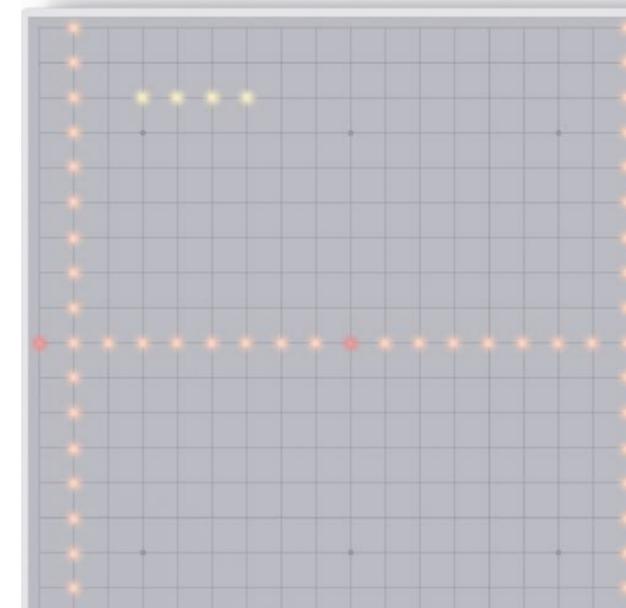
Magnet



Go Chess Pieces



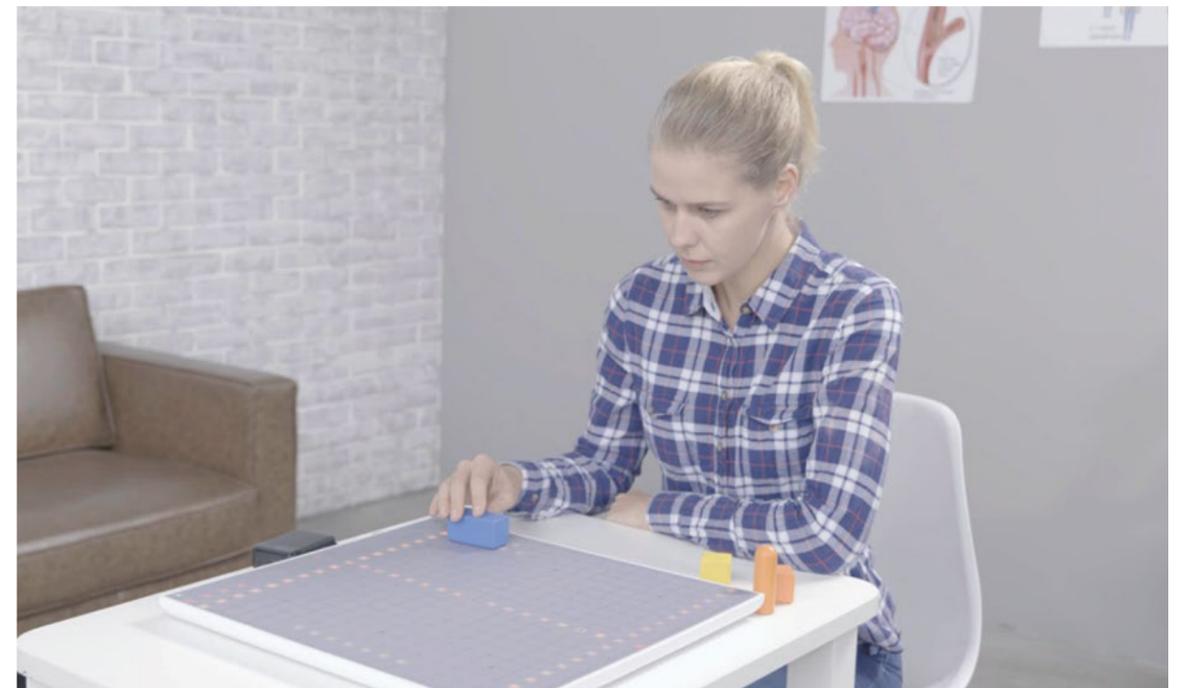
Handle Grip





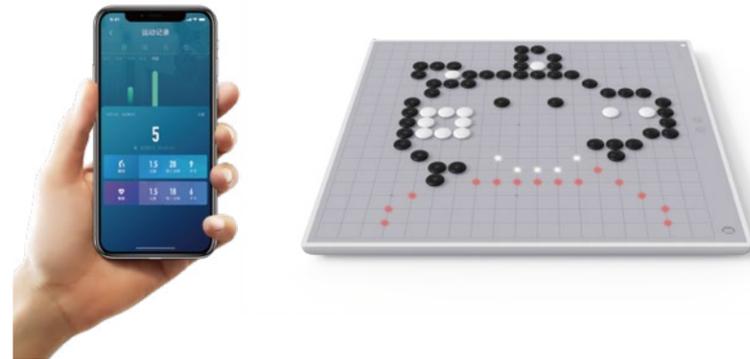
Interactive Training, Motivate Users

Through collaboration or competition mechanisms, users can complete diversified training in the form of human-machine and human-human interaction, improving users' training enthusiasm and initiative.



Wireless Design, Support More Interconnection Functions

OTParvos™ connects with an online database to provide more training plans. What's more, the training platform can be continuously optimized through an online firmware upgrade.



USB Charging



19*19 LED Array



Indicator Light



Electromagnetic Sensor



AI Application



Portable Design



Firmware Upgrade

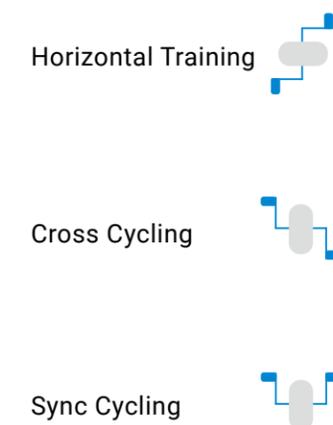


Home Button

CycleMotus™

Active and Passive Training System for Upper and Lower Limb

CycleMotus™ product series is the perfect solution for the upper and lower limbs training. It can be used in different environment as well as stages of rehabilitation. It equips with a high-resolution touch screen display and controlled motor system that allows it to fulfil the training requirements of different rehabilitation stages. The upper limb training can effectively improve cardiovascular health as well as strengthening the muscles group of the arm, upper body and shoulder. The lower limb training targets to strengthen the thigh and calf muscles as well as improving the balance.



Active and Passive Training System for Upper and Lower Limbs
CycleMotus™ A4



Horizontal Training



Sync Cycling



CycleMotus™ A4K



CycleMotus™ B2L



CycleMotus™ A2L



CycleMotus™ A2U



Abundant Training Modes Provide Training for Different Positions

Based on the conditions of the user, training can be done in sitting or supine position. Besides, the different training modes can fulfil training requirements in the whole continuum of rehabilitation.



Lower limb training
Sitting position



Upper limb training
Sitting position



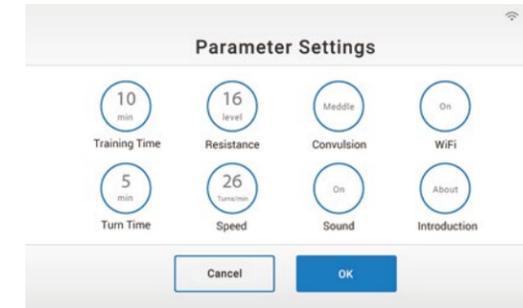
Lower limb training
Supine position on a treatment couch



Lower limb training
Supine position on a hospital bed

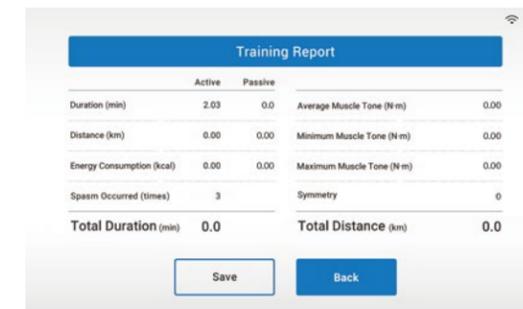


10" Touch Screen Display An Intelligent Training



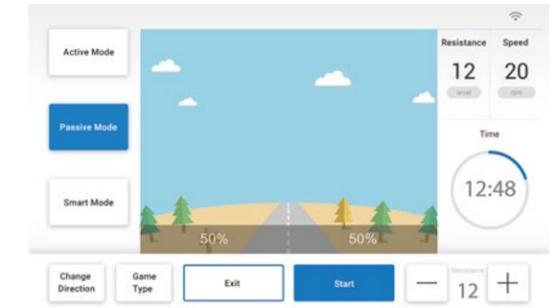
Adjustable Training Parameters

Adjust different training parameters based on the condition of a user.



Digitised Training

Real-time feedback and auto-generated report system allow users to understand their performance easily.



Immersive Interactive Games

Different training modes integrated with video games providing visual, audio and kinesthetic inputs towards the user, which can retain a user's interest and achieve rehabilitation purpose at the same time.



Symmetry Training

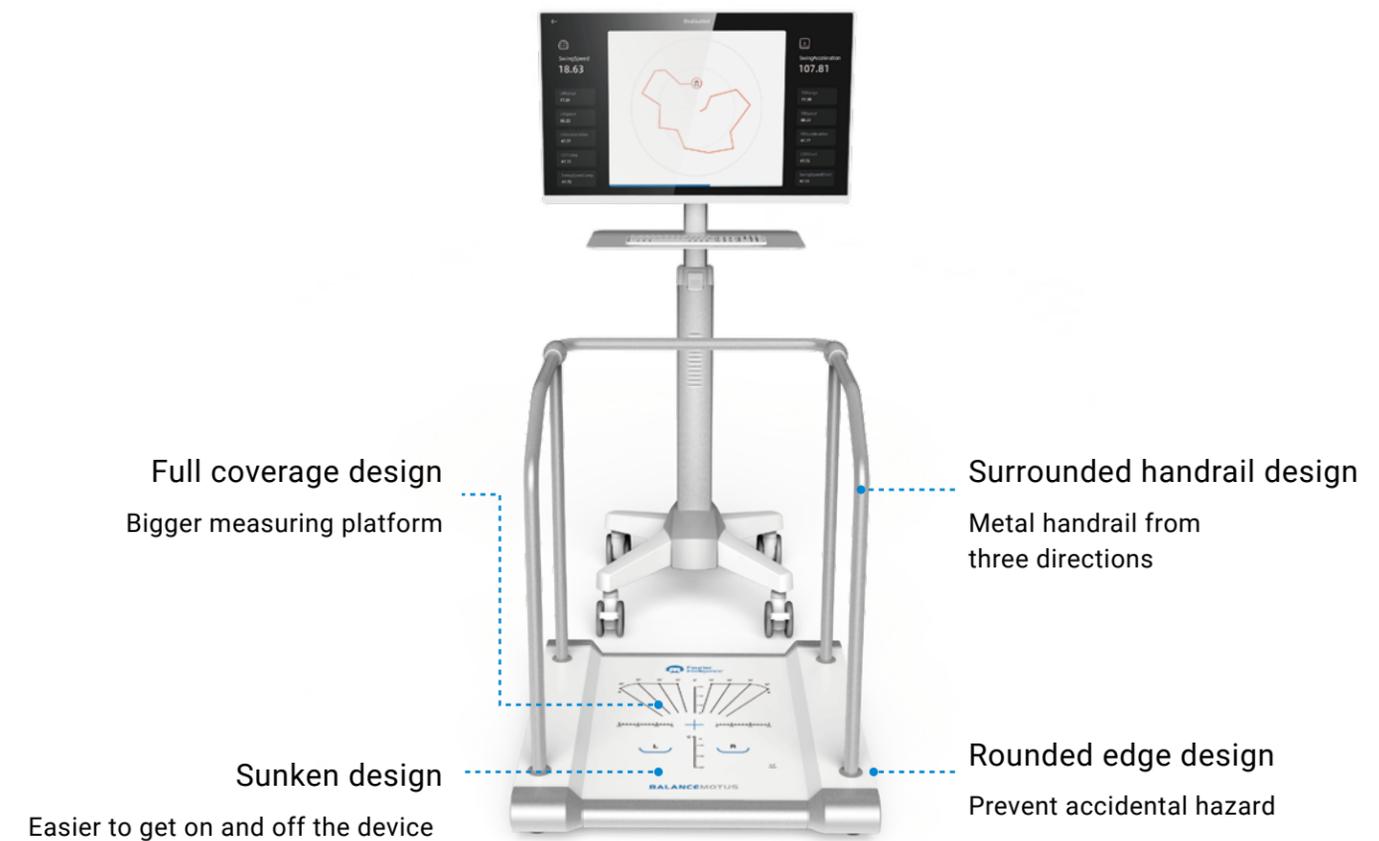
Targeted training to ensure equal efforts from both limbs.



BalanceMotus™

Balance Assessment and Training System

BalanceMotus™ is a balance assessment and training system that equipped with high precision sensors, biomechanical algorithm, interactive software and ergonomic design. Its quick assessment features can analyse the balancing ability and the risk of falling in 3 minutes. Different training modes are provided to improve user's body coordination and balance.



Quick assessment Replacing Berg Balance Scale

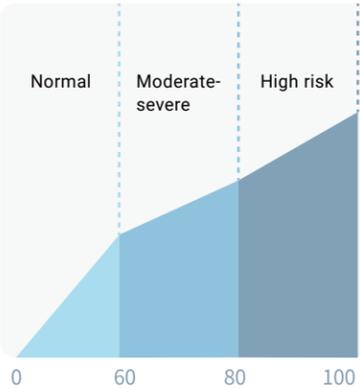
Berg balance scale is the conventional way of measuring one's balance. It takes 20 minutes to complete, even by a professional. Yet, it is highly affected by human error.

BalanceMotus™ is able to complete the assessment in 2 minutes, providing a report with precise analysis. 300 sample-sized study was conducted to prove that the result is consistent with the Berg balance scale. Besides, the assessment will not involve any bias as compared to the conventional method.

	BalanceMotus™	Berg Balance Scale
Assessment time	2~3 minutes	15~20 minutes



Comprehensive Report Easy to Understand



The comprehensive assessment criteria and report presentation allow the therapist to quickly and easily understand the conditions of the user. The biomechanical algorithm integrated software is capable of interpreting 13 different parameters hence determining the risk of falling, balance ability and injury. Based on the result, customised training can be implemented to fulfil different training requirements.

Multiple Training Modes Fun and Motivating

An extensive library of interactive games and customisable training can guide the user to complete postural control through audio and visual inputs, which can retain a user's interest and achieve rehabilitation purpose at the same time.





Fourier Intelligence Rehabilitation Hub
