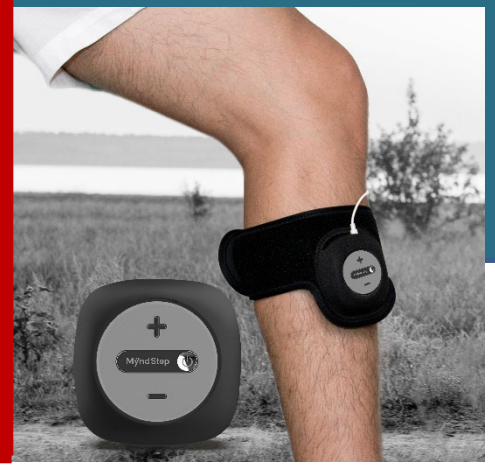
MyndStep

Restoring Independence, One Step At A Time



01 Background of Foot Drop

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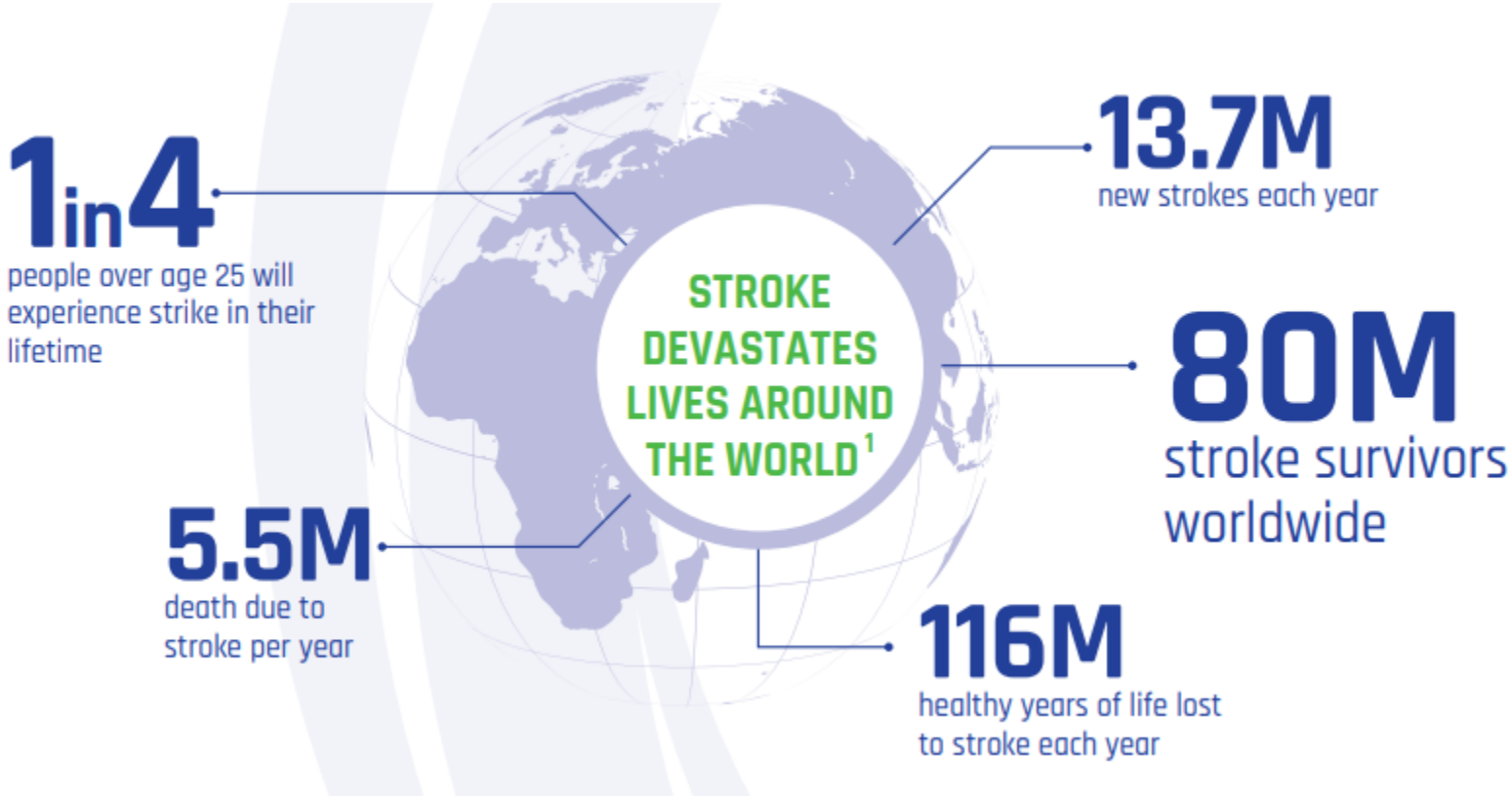
01 Background of Foot Drop

The Global Voice for Stroke

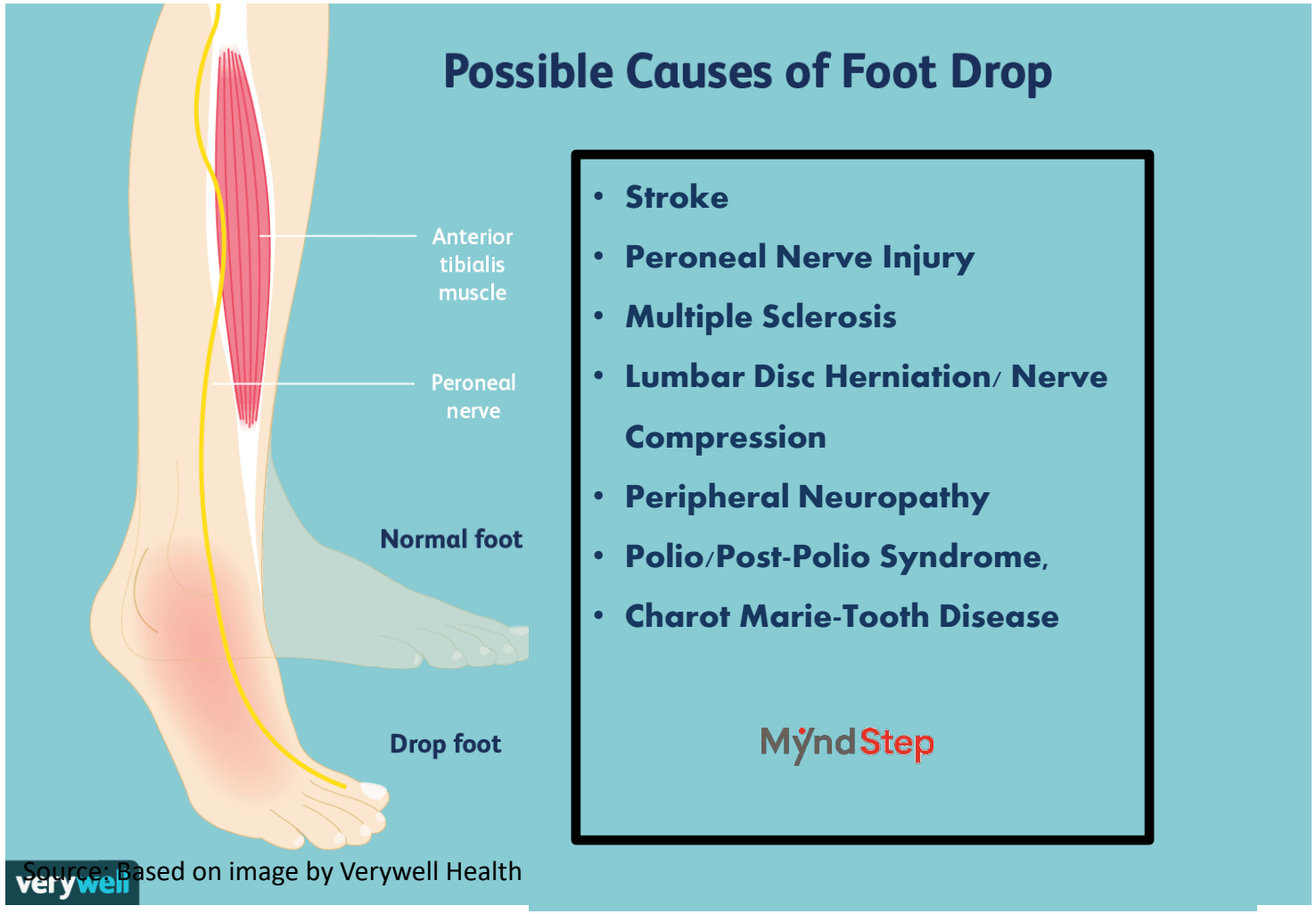


- From World Stroke Organization (WSO) Annual Report 2019

Almost 14 million people will have their first stroke in 2019; Worldwide 80m people live with the impact of stroke. Stroke accounts for 116m years of healthy life lost each year. The individual,social and economic impact is enormous and yet, at least half of all strokes are potentially preventable with appropriate awareness and prevention interventions. Cost-effective therapies are now available that can significantly limit the consequences of stroke. However, most stroke patients in the world do not have access to these therapies.

https://www.world-stroke.org/assets/downloads/WSO_2019_Annual_Report_online.pdf

The Potential Market For Foot Drop



Source: Based on image by Verywell Health

Foot Drop is a condition which describes difficulty lifting the fore-foot thus causing the toes to drag. The foot drop will affect the quality of walking and the safety during walking.
Neurological conditions creating a foot drop: **Stroke, Peroneal nerve injury, Multiple Sclerosis, Lumbar disc herniation leading to nerve compression, Peripheral neuropathy, Diabetic neuropathy, Polio/Post-Polio Syndrome, Charot Marie-Tooth Disease**
Foot drop will impact the quality of life as follows: **Performing activities of daily living/self-care within the home and within the community, and during recreational activities.**
Individuals experience atypical walking patterns due to:

- Decreased muscle strength,
- Imbalances with muscle strength,
- Decrease with sensation,
- Decrease with proprioception,
- Decrease coordination and agility,
- Decrease of endurance,
- Increase sedentary life-style,
- Decrease self-confidence .

All the above lead to an increased risk for falls.

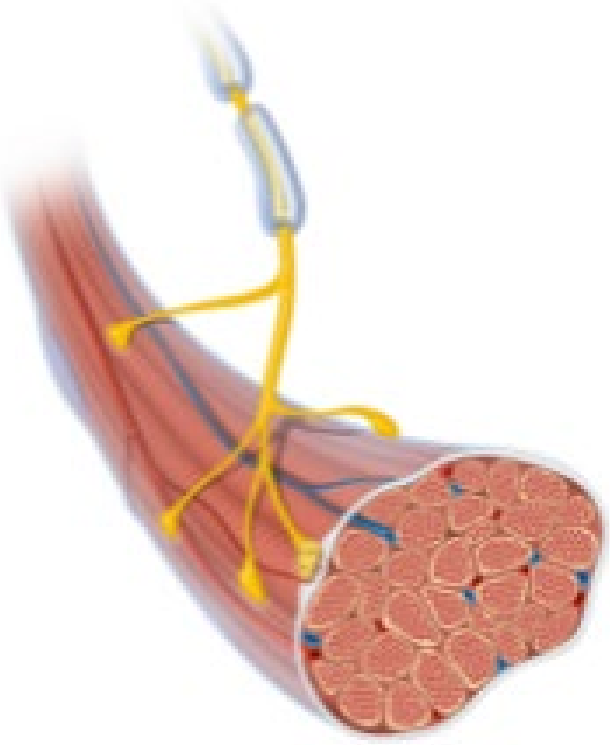
02 What is NMES & FES

Neuromuscular Electrical Stimulation, NMES

NMES utilizes low frequncy electrical current（＜1000Hz） to stimulate specific muscles, make them contract, thereby improving local functions.

·**NMES** simulataneously stimulates the motor nerves and sensory nerves, to promote the remodeling of brain function.

·**NMES** is often used to “re-train” or “re-educate” muscle strength and movement, as a part of motor relearning program.



Functional Electrical Stimulation, FES

FES is the general term for focusing the activation and/or restoration of function by electrical stimulation; which is afferent and efferent nerve, neuromuscular, and muscle stimulation.

The MyndStep system performs peroneal nerve stimulation which facilitates dorsi-flexion of the foot and toes. The electrical stimulation will enhance swing phase during gait and correction of the foot drop.

FES utilizes low frequency electricity to help the disabled finish a task or functional movement like walking, reaching or grasping. It promotes muscle contraction to replace or strengthen dysfunctional limbs.

03 Product Introduction

FES Foot Drop Device

The MyndStep device offers real time data collection via the accelerometer and the gyroscope sensors. With the combination of these sensors, MyndStep becomes an excellent tool for measuring the orientation of the leg and foot movements in 3-dimensional perspective.

- **Easy to use**
- **Easy to calibrate**
- **Low set-up time**

Technical Parameters

	The MyndStep system
Waveform	Symmetrical biphasic pulse
Parameters	Intensity：0mA～100mA, step by 1mA (at 500Ω) Frequency：1Hz～120Hz, step by 1Hz Pulse width：50μs～500μs, step by 10μs Treatment time: 1-60 mins, stepping 1 min Battery: 3.7V, 1200 mAh, lithium battery Timing Modulation: Ramp up time. Hold time, Ramp down time and Interval time adjustable With a wider range of parameters, it can meet more clinical use needs.
Features	➢ Auto-memory function ➢ Blue tooth connection ➢ Intelligent acceleration sensor and gyroscope ➢ Preset protocols and custom protocols available ➢ 1200 mAh rechargeable Li battery ➢ Magnetic electrodes ➢ Walking distance and steps are displayed in real time
Warranty	24 Months
Regulatory	FDA Listed (510k No. K202110) Health Canada (LN: 108428)

Trigger Point of MyndStep

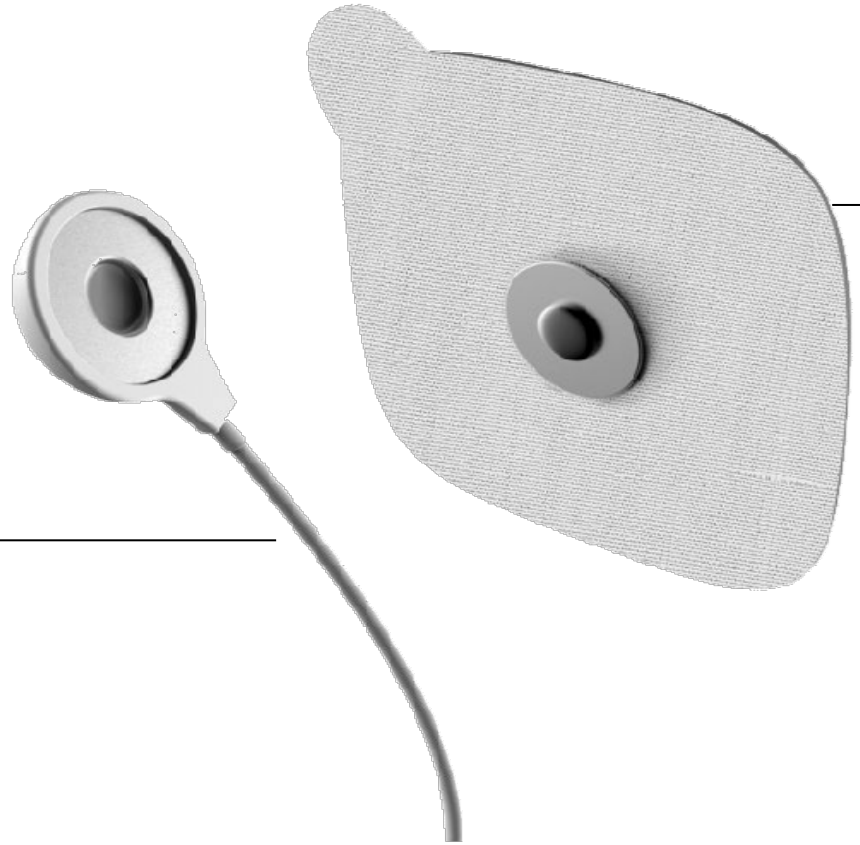
Intelligent Sensor

MyndStep’s built-in **Gyroscope and Acceleration Sensor** tracks the patient's swing angle and speed while walking. When the leg swings to the angle, the electrical stimulation will be triggered. The stimulation-on angle is from -30 to - 5° .
The stimulation holds for 1 to 3 seconds when the sensor detects the angle, depending on the patient’s walking speed.

Portable, Easy Placement Device

- Lightweight & easy carrying device host;
- Easy placement, magnetic electrodes;
- Bluetooth connect， controlled by smart phone or tablet;
- Independent operation, even without phone/tablet;
- Rechargeable Li battery, USB charging port, meet whole day use;
- Easy App download from the App Store of Google Play.

Easy to Apply Magnetic Electrodes

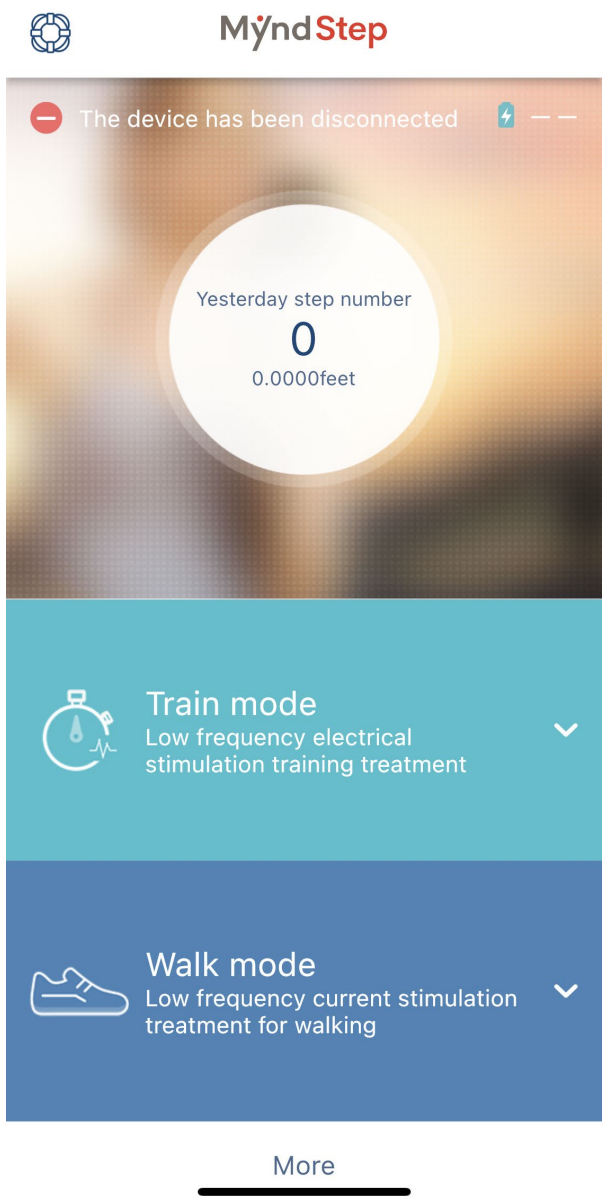


Advantages:

- The **magnetic electrodes** contain a **conductive hydrogel** and are **easily connected** to a lead wire through a **snap button**.
- Easy to apply and remove makes the device **user-friendly.**

Note: Skin must be cleaned with alcohol or soapy water before applying electrodes.

Treatment Modes



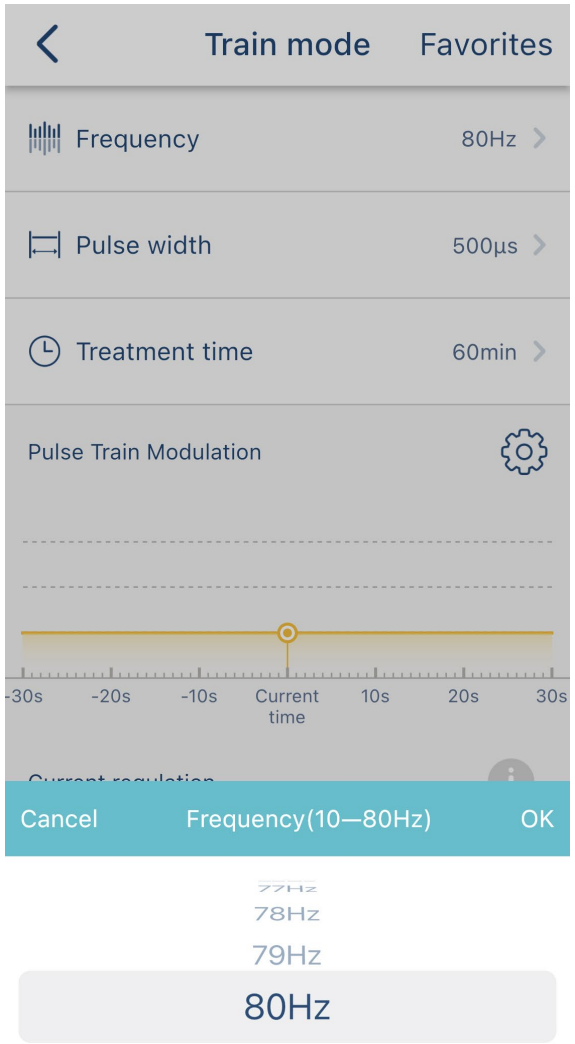
①Train mode:

Train Mode can be used for motor re-education while in a sitting or supine position. Train mode will address: 1. trophic changes in muscle tissue, soft tissue, and skin; 2. muscle atrophy; 3. maintain and improve range of motion; 4. neuromodulation of abnormal muscle tone; 5. promotion of muscle pumping action to facilitate venous and lymphatic circulation; 6. increase local blood for the healthy support of soft tissue and nerve integrity; and 7. risk for skin breakdown/wound.

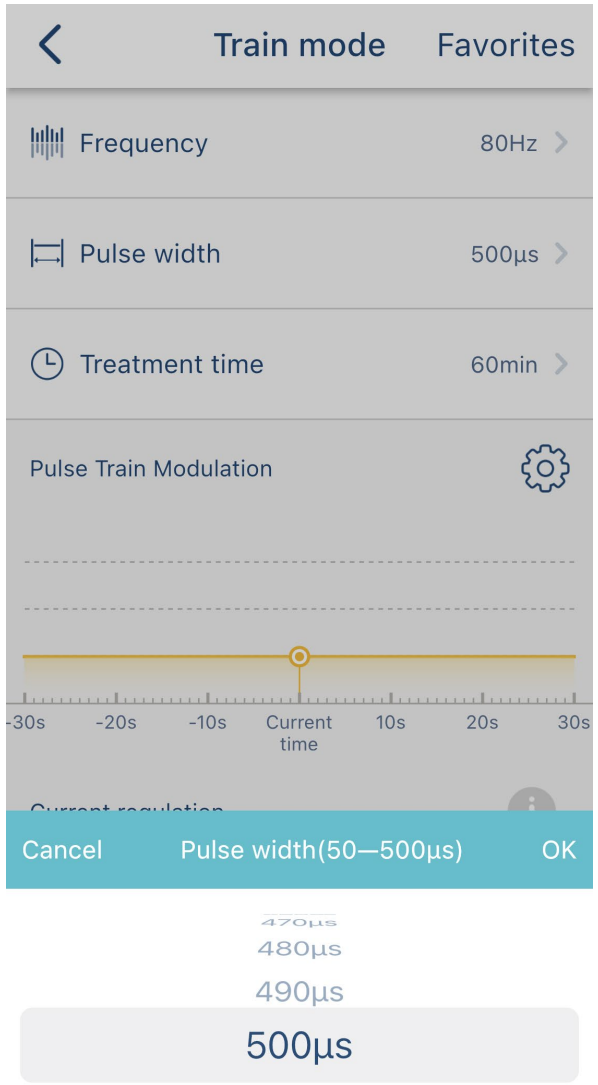
②Walk mode:

Electrical stimulation via electrodes will stimulate nerves to create muscle contractions. The stimulated muscles create the dorsi-flexion of the foot and toes/ lifting of the forefoot and toes.
The **Walk Mode** promotes the re-education and neuro-control with gait training.

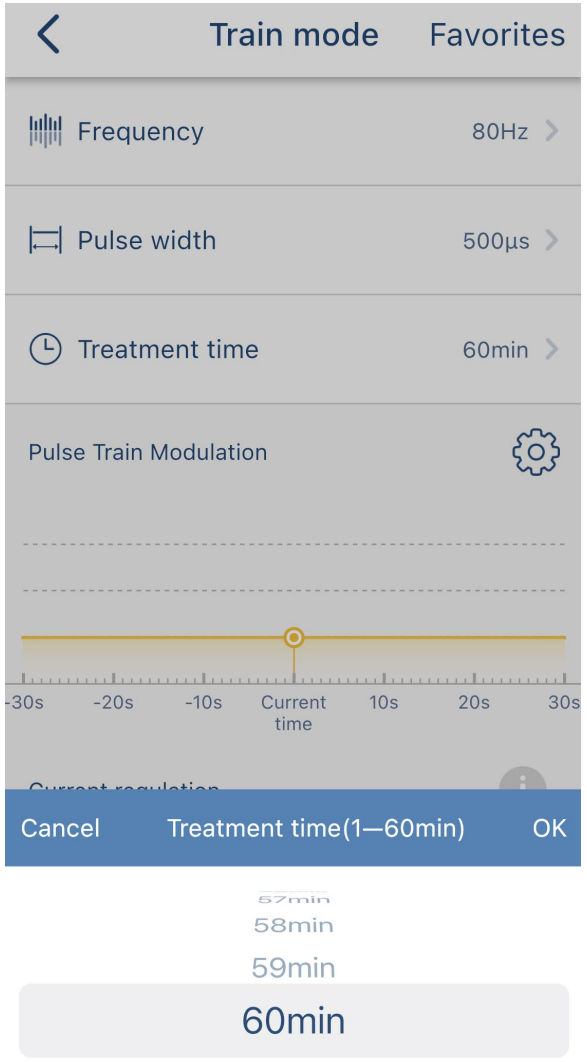
Software features - widely adjusted parameters



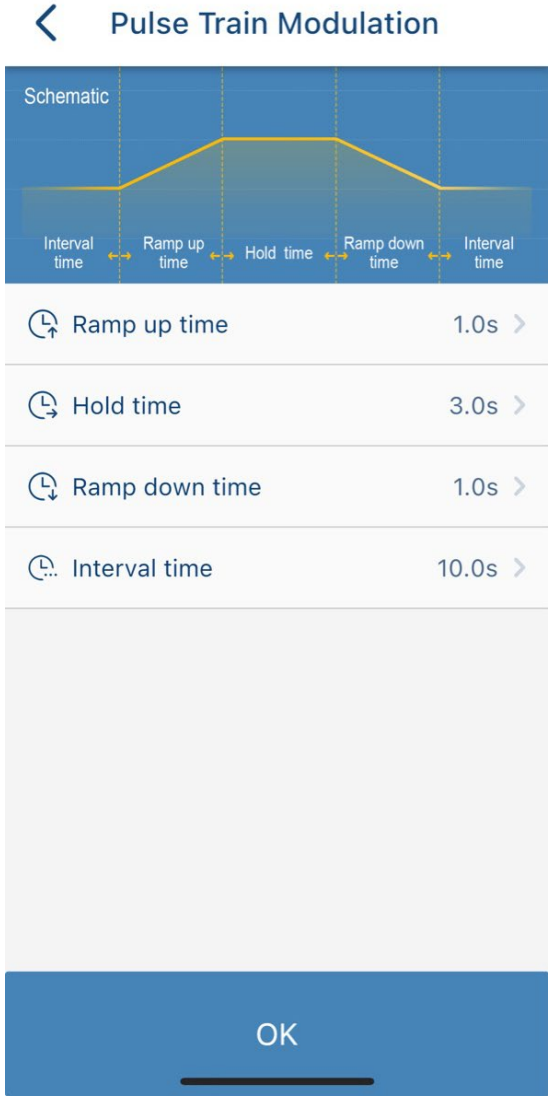
Frequency



Puse width



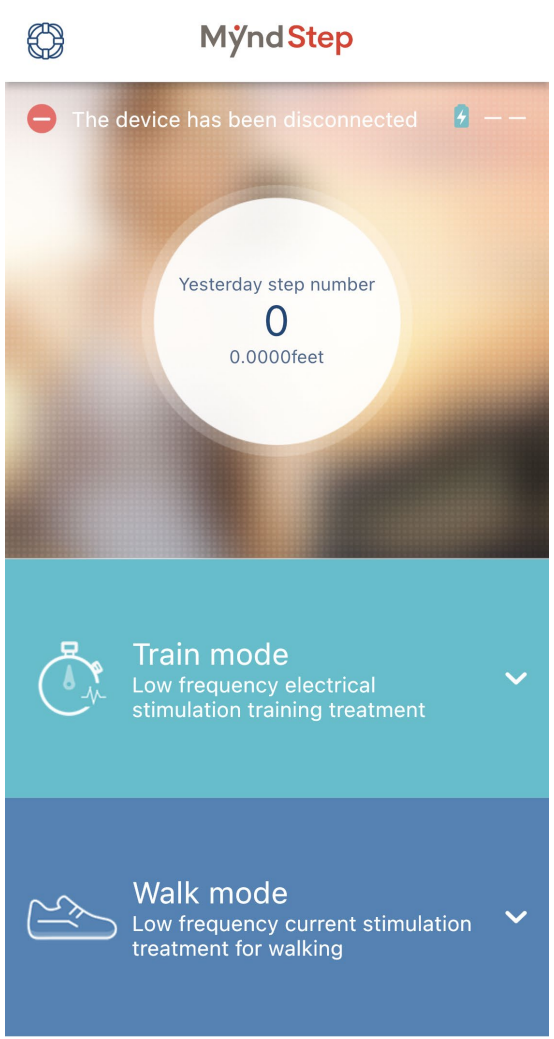
Treatment time

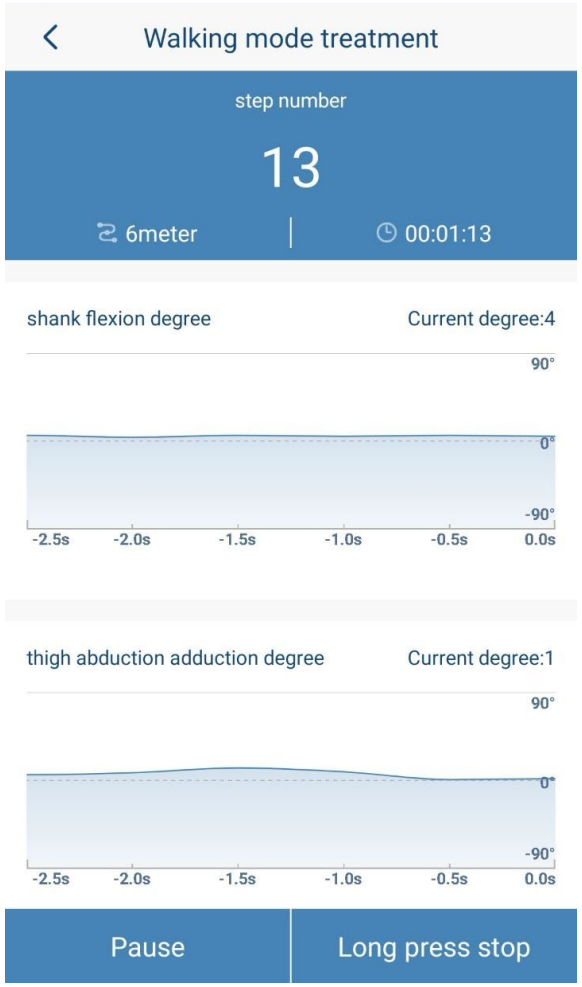


Pulse Train Modulation

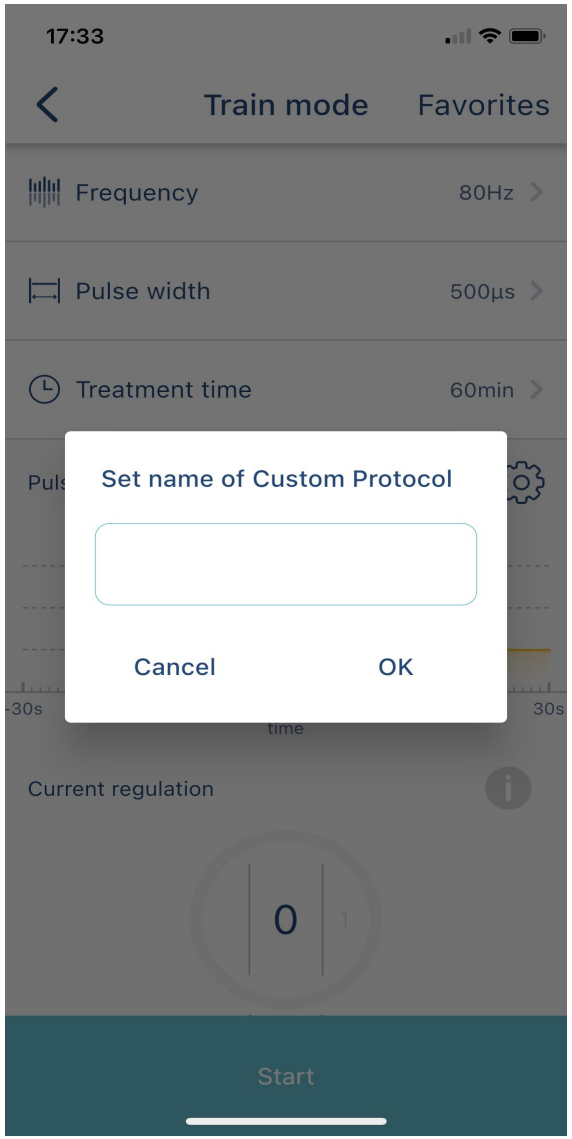
Real-time observation

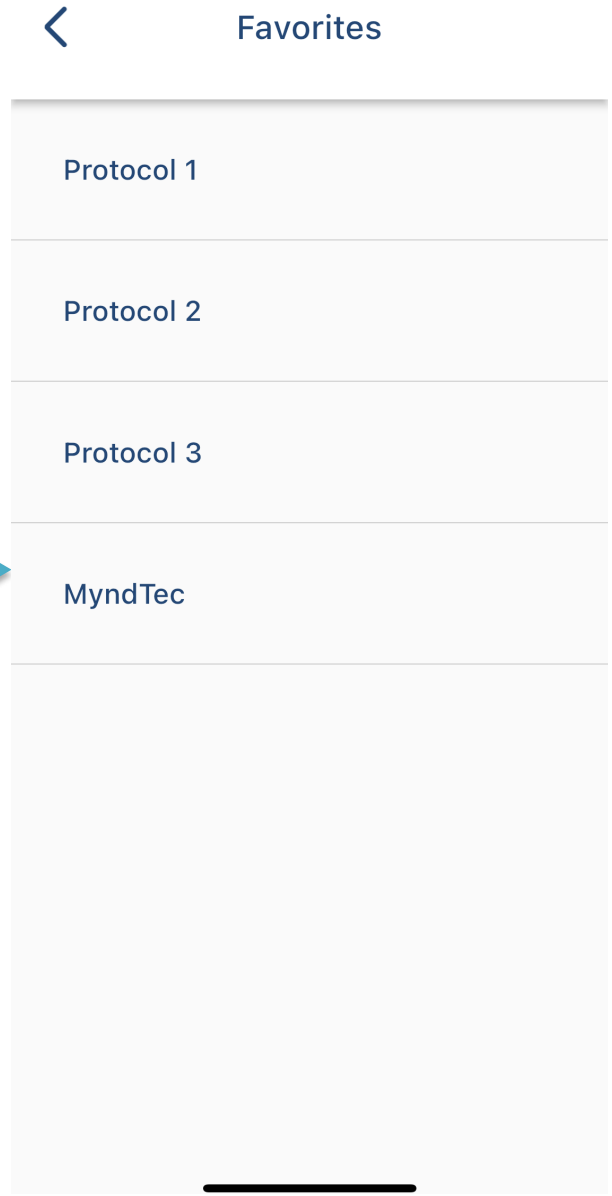
Real- time Dynamic Observation of Walking Angle, as well as recording walking distance and step count, makes it easy to quantify exercise data.

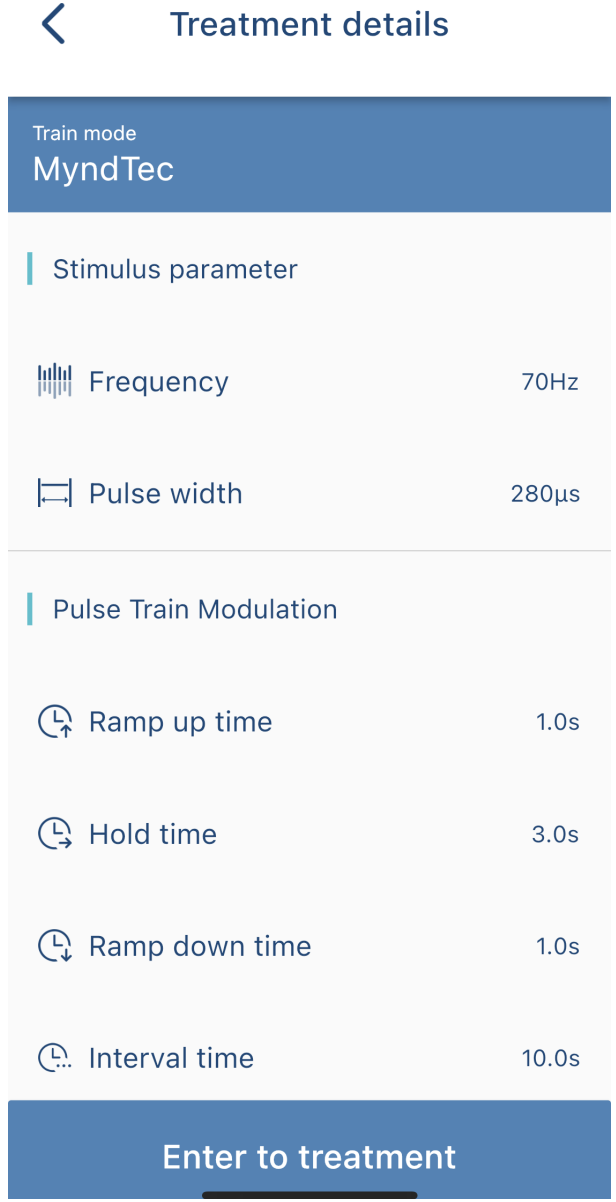




Custom protocol

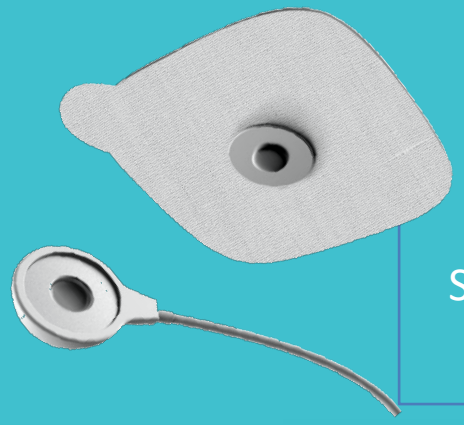






Package & Accessories

Foot Drop Brace



Self-Adhesive Electrode and
Lead Wire

MyndStep
Foot Drop Stimulator

Power Adapter

04 Competitor Analysis

Brand Comparison

Model	MyndStep	**L300 Go / Bioness**	**Walkaide / Innov. Neurotronics**
Price	$1,000	~ $6,000	~ $5,000
Weight	60g	60g	87.6 g
Dimension	59x59x22 mm3	82x47x15 mm3	61x83x20.5 mm3
Battery	1200mAh, Rechargeable	1000mAh, Rechargeable	Four 1.5 Volt Alkaline AA, LR6
Mode	Train, Walk	Training, Gait,Clinician	Walk (Heel, Hand or Tilt)
Intensity	0-100mA, Increment of 1	0-100mA, Increment of 1	0-121mA
Duration	50-500μs, Increment of 10	250-1250μs, 8 Levels	25-300 μs. 7 levels
Frequency	10-80Hz, Increment of 1	10-45Hz, Increment of 5	16.7-33.3 Hz Increment of 5 to 8
Output Waveform	Symmetric Biphasic Pulse	Asymmetric/ Symmetric Biphasic Pulse	Biphasic Asymmetrical Pulse
Foot Sensor	x	√	√
Control	App & Device	Remote & Device	App & Device

MyndStep

MyndTec

1900 Minnesota Court, Suite 122
Mississauga, ON, L5N 3C9
www.myndtec.com
1-888-363-0581 or 905-363-0571