

EXO-H3

The Exo-H3 is the third version of Technaid's lower limbs robotic exoskeleton. On it we have put all our expertise and previous knowledge to bring you a **versatile, robust and reliable platform for your research.**

Exo-H3 can completely emulate the process of human walking replicating the previously introduced gait pattern through its six actuated joints in the sagittal plane. Thereby it can assist to people that have partially lost the capacity to walk after suffering a stroke, contributing to the current **neurorehabilitation research.**

The main advantage of the Exo-H3 is that, having been designed specifically for research, it allows the implementation of own algorithms as well as the application of different robotic control strategies. This, together with its ability to adapt to different sizes gives you a wide range of possibilities when carrying out our research

The Exo-H3 also has an **Android App** as interface to operate the basic functions of the exoskeleton such as gait speed, motor assistance or stand up and sit down commands.

Exo-H3 has been the result of many years of research of the Bioengineering Group of CSIC together with Technaid (CSIC's spin-off company). Technaid, S.L. has the exclusive license for the manufacturing and commercial exploitation of the system.



Exo-H3 Robotic System Technical Specifications

Number of Degrees of Freedom	6 degrees of freedom in the sagittal plane. One for hip, knee and ankle in both right and left legs.		
Type of Control	Position, Torque and Admittance in real time control.		
Final Actuator	Net Torque	35	Nm.
	Peak Torque	152	Nm.
Communication	External CAN-Bus Wi-Fi 2.4 GHz IEEE 802.11 b/g/n Bluetooth v3.0 (Class 2) 2,4 GHz Transceiver		
Power supply (Charger)	100 – 240 V AC / 50-60 Hz (AC power line)		
Battery LiFePO4	Size (H)	14	cm.
	Size (W)	10	cm.
	Size (L)	16	cm.
	Normal capacity Type	12.0	Ah.
	Normal voltage	22,4	VDC.
	Normal Power	230	Wh.
	Standard discharge current	2.4 (const)	A.
Principal structure production material	Stainless steel and high resistance aluminum (7075).		
Exoskeleton sensors	6x Joint Position. 6x Joint Interaction Torque 4x Pressure Sensor (heel and toe)		
Joints Range of Movement (Flexion/Extension)	Hip (135°)	105° (flex.)	30° (ext.)
	Knee (110°)	105° (flex.)	5° (ext.)
	Ankle (60°)	30° (flex.)	30° (ext.)
Size Adaptability	Min. subject's height (*)	110	cm.
	Max. subject's height (*)	210	cm.
	Min. subject's weight	40	Kg.
	Max. subject's weight	100	Kg.
Dimensions	118 cm. tall		
	45 cm. long (side view)		
	30 cm. wide (front view)		
Weight	17 kg. approx. / 14,2 kg. without battery		

* Some sizes options are only available through optional accessories.

Exo-H3 Main Features

- Open Hips Attachment for an **easy installation**
- Easy **subject adaptation** through optional extended cables and extension bars (different sizes)
- Hips Attachment **adjustable in the sagittal and frontal plane.**
- **Toolkit** included.
- Two straps per segment to ensure an **optimal fixation.**
- Eye Bolts installed for **harness fixation.**
- Included **handlebars** to assist the gait.
- **Interchangeable battery** for a continuous use.
- Emergency stop.
- Communication **compatibility with several platforms** (Matlab, LabView,...)
- **Android App** for gait management
- Online support.

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