What is HAL?

CYBERDYNE’s Medical Hybrid Assistive Limb (HAL) is the world’s first robotic medical device that has been shown to improve a patient’s ability to walk. How does it work?

HAL’S MOTION PRINCIPLE

01 THINK
The brain generates command signals.
When a person tries to move their body, the brain transmits necessary signals through the nerves to the muscles.

02 SEND
The muscles receive the command signals.
Each muscle contracts to generate power when it receives the appropriate command signal sent from the brain through the nerves. With a spinal cord injury, this pathway is disrupted and the signal is too weak to generate sufficient power.

03 READ
HAL reads the signals.
Signals sent to the muscles by the brain trickle onto the skin surface as very faint bio-electrical signals. HAL uses sensors placed on the surface of the skin to detect these bio-electrical signals and recognizes what kind of movement the wearer wants to make.

04 MOVE
HAL moves as the wearer intends.
HAL controls the power units at each joint based on these bio-electrical signals, and allows the wearer to perform the desired movements with their voluntary commands.

05 FEEDBACK
Information is sent back to the brain.
When HAL has appropriately assisted the intended movement, the feeling is fed back to the brain. Active use of these neural pathways for voluntary movement with physical feedback to the brain leads to an improved ability for the wearer to walk on their own.

CYBERDYNE, INC. and Brooks Rehabilitation have partnered to bring innovative advanced robotic and cybernic technology to the U.S. Brooks will be the first U.S.-based center for CYBERDYNE’s Medical Hybrid Assistive Limb (HAL).

For more information, please call 904-345-7162 or visit BrooksCyberdyne.org