**Exoskeletons**

Exoskeletons and the role they are playing in both the rehabilitative care and home life of people living with paralysis became an important emerging technology in 2014. Several exoskeleton walking devices are coming to market for people with paralysis. These are battery powered bionic legs with small motors on the joints.

In June 2014, the Food and Drug Administration (FDA) approved the ReWalk Personal System for use in the home and in the community. It is the first exoskeleton device to be approved by the FDA. According to the company, the system: “Provides user-initiated mobility through the integration of a wearable brace support, a computer-based control system and motion sensors.” ReWalk affords people living with paraplegia with the opportunity to both stand and walk independently, but the cost could be prohibitive for some – a recent Slate article claimed the price of owning one of these devices is close to $70,000. ReWalk comes from Israel and Europe.

Ekso Bionics is currently testing its robotic exoskeletons at rehabilitation centers around the globe. According to the company, the device is intended for supervised use in a clinical setting by individuals with various levels of paralysis. Ekso’s most recently-reported findings, from September 2012, were culled from a clinical trial of 13 individuals, 12 with paraplegia, and one with tetraplegia. The study found that walking and standing in Ekso’s device was feasible, and that improvements in function were made by training with the device: Walking speed and distance, fluidity, gait, and balance all got better, the company says. Ekso Robotic Exoskeletons are not currently approved for personal use in the United States.

The **Parker Indego** is a “powered lower limb orthosis enabling people with mobility impairments to walk and participate in over-ground gait training.” The Indego is still in early phases of clinical testing: In July 2014, the company tested the device at the Shepherd Center in Atlanta, Georgia – it was the first time that it had ever been used by an individual living with quadriplegia - Cole Sydnor. The Christopher & Dana Reeve Foundation spoke with Cole, we encourage you to read the interview to learn more about his experience. The Indego devices are not currently approved for personal use in the U.S.

The Hybrid Assistive Limb (HAL), developed by Japanese robot maker Cyberdyne, is moving through the medical device approval processes.
The companies suggest exoskeleton devices will do more than give users eye-to-eye contact with others. Health benefits may include better bone density and reduced pain. There is anecdotal evidence that robotic walking helps bowel and bladder function.

Source: Paralysis Resource Guide 2013

Websites

The following are provided as information sources. The Reeve Foundation does not endorse any products, vendors or services and a listing here is not to be taken as an endorsement.

www.eksobionics.com
**Ekso Bionics**
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Email: CustomerRelations@eksobionics.com

www.cyberdyne.jp/english
**Cyberdyne’s Hybrid Assistive Limb**
〒305-0818
2-2-1, Gakuen-Minami, Tsukuba, Ibaraki Prefecture, 305-0818, Japan
An email form may be found here: [https://ssl.cyberdyne.jp/english/company/Inquiry.php](https://ssl.cyberdyne.jp/english/company/Inquiry.php)

http://www.indego.com
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