

Community Meeting (July 25, 2018): Exoskeleton Devices

Description

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Slides: [presentation](#), [pdf](#)

Notes

- Much of the research coming from the US military (for rehab) and from Japan
 - In Japan it is due to their aging population.
 - Japan is depopulating at a fast rate
 - Large investment to do more work with a smaller population
- Interested in how exoskeletons can enhance independence
- battery life tends to max out at about 4hrs for now, but batteries are continuously improving
- rehab vs everyday use
 - some products are exclusively for rehab
 - need to be used in a rehab environment with a trained physiotherapist
 - these are the most expensive
 - range from \$40k to \$250k
 - in most cases you'd need to still use some form of support (e.g. walker) while using the device
 - they tend to weigh about 50kg but you don't tend to feel it because they are designed with a good centre of gravity.
 - Ekso Bionics
 - can do some or all of the work to assist an individual with walking
 - the more one can do themselves the better, but it can help with progressive rehab
 - costs about \$240k
 - Hal - Hybrid Assistive Limb (Japan)
 - one of the older companies (about 10 or 12 years old)
 - only available in Japan; Bochum, Germany; and Florida, USA
 - continuous feedback loop to wearers to help retrain the brain
 - a lot of work to move
 - research to support that it can improve walking even if it's been many years since the loss of walking
 - no evidence that you will lose the improvements that you make if you do the full program (see below).
 - There is a 60 session program that you need to undergo to use it.
 - In Germany it costs about \$48k plus travel and living.
 - In Florida it costs \$24k plus travel and living
- everyday use
 - assist with working
 - assist with walking and rehab
 - improve independence
 - needs to be supported (serviced) in the region that it is being used.
 - Rewalk
 - from the Israeli military
 - to reduce fatigue for soldiers due to equipment weight and terrain
 - costs about \$120k
 - one piece suit
 - can't sit in wheel chair or car because of the large backpack
 - will walk for you, can help someone who is close to fully paralyzed
 - the size (backpack) and potential need of assistance to put on means that it won't help with independence
 - Indego
 - parent company is Parker Hannifin who's key focus is Aviation, Aerospace, and Pharmaceutical
 - can be worn while driving
 - can get in and out of fairly quickly
 - have to move left to right to move
 - has a walking and training mode
 - can suggest programs to improve your walking over time
 - uses some form of AI to determine this
 - costs about \$120k
 - they recommend up to 2 weeks of training to get the most out of it
 - the training cost is extra.
 - Keeogo
 - A Canadian device but only available in Ontario and Quebec
 - costs about \$40k and have financing options
 - originally developed for the Canadian military
 - functions by picking up slight muscle movements in knees and hip flexors
 - seems to be targeting those who require only a little to moderate help
 - Suitx
 - In the process of applying for FDA approval, does have CE certification in the EU
 - costs about \$50k
 - 2 piece suit
 - only weighs about 10kg
- Ireland
 - has about 9 exoskeletons which is one of the highest per capita

