

Researchers test technological support with robots and functional electrical stimulation

By **Thomas Ross** - April 19, 2021

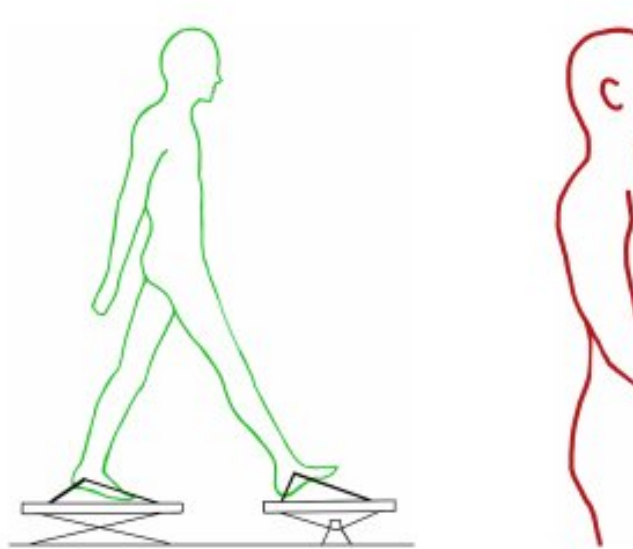


Figure 1-1: Illustrations of end-effector robotic devices and upper limb (right). Source: [3]

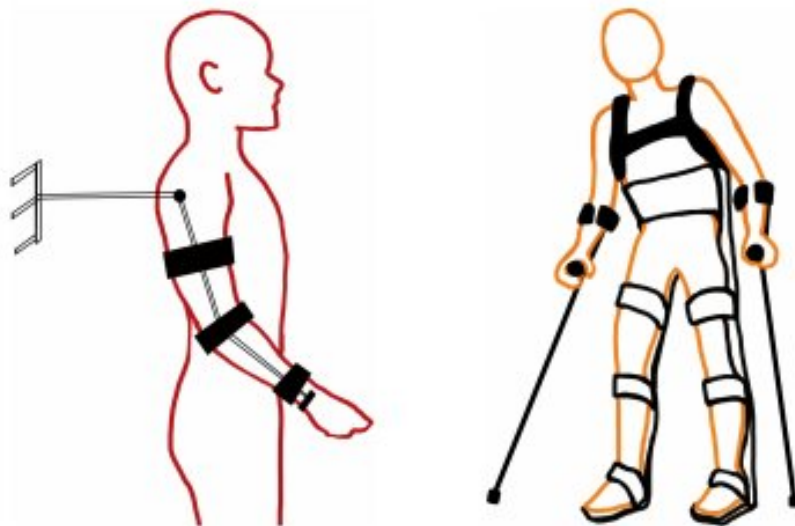


Figure 1-2: Illustration of exoskeleton devices (from left: upper limb exoskeleton, lower limb overground body weight supported exoskeleton). Source: [3]

Credit: Robotics and functional electrical stimulation for stroke rehabilitation. <https://www.researchgate.net/publication/351111111>
Some robots can create an additional clinical benefit in the rehabilitation of stroke patients. This is the result of a study based on scientific evidence that the Austrian Institute for Health Economics, in cooperation with a German guideline working group and has now published. After a critical analysis and a health economic evaluation before the use of these supplemental therapy options.

Every year in Austria alone, life changes abruptly for 25,000 people: they suffer a stroke in the lower or upper extremities. Prompt rehabilitation measures, however, often help them to regain their everyday activities being primary rehabilitation goals. However, good rehabilitation procedures are therefore placed in a supplementation with robots or functional electrical stimulation. Whether these measures achieve a real additional clinical benefit, however, has now been investigated by the ReMoS/ Rehabilitation of Mobility after Stroke—AG) of the Association of the Scientific

The comprehensive analysis was based on a total of over 55 randomized clinical trials. "The specific use of robot-assisted rehabilitation (RAR) and functional electrical stimulation (FES) with available devices is extremely wide for both RAR and FES," comments Priv. Doz. Dr. Christian. "The results are correspondingly high, but unfortunately—as our study shows—they are only partially due to an additional benefit for some RAR interventions in combination with standard therapy for FES."

In fact, some types of RAR may benefit the therapeutic process, especially when RAR is used in combination with FES. However, the evidence of an additional benefit of RAR as a support to gait training may be caused by a more intensive and frequent training of patients, achieved without add

therefore be very useful," concludes Dr. Wild. "It can improve the therapy results and of time and physical strain. However, we recommend evaluating the use also in health could not be proven for all robots and heterogeneity of the products can be observed. therapeutic context and conditions should also be included in the evaluation."

The FES, on the other hand, disappointed the expectations of additional benefits. The muscles affected by paralysis by means of external electrical stimulation as well as in the benefits of FES, a total of 26 clinical studies were evaluated by AIHTA and Germar therapy with electrostimulation did rarely provide any additional benefit. However, the FES (FES with surface electrodes during walking) is not inferior to a conventional ankle useful in this case. In addition, six further randomized control studies are underway for FES. For Dr. Wild, this is a welcomed addition to the data base, which may also provide

Overall, the study, which is now available online, shows a mixed picture of the clinical standard [rehabilitation of stroke patients](#). Some interventions of the RAR offer additional therefore recommended in any case before use in standard therapy.

[Robotic exoskeleton training expands options for stroke rehabilitation](#)

More information:

Goetz, G. et al. (2021): Robotics and functional electrical stimulation for stroke rehabilitation
Provided by

Austrian Institute for Health Technology Assessment (AIHTA)

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