

Assessment Tools for the Robotic Orthosis Lokomat: From Automated to Instrumented Training

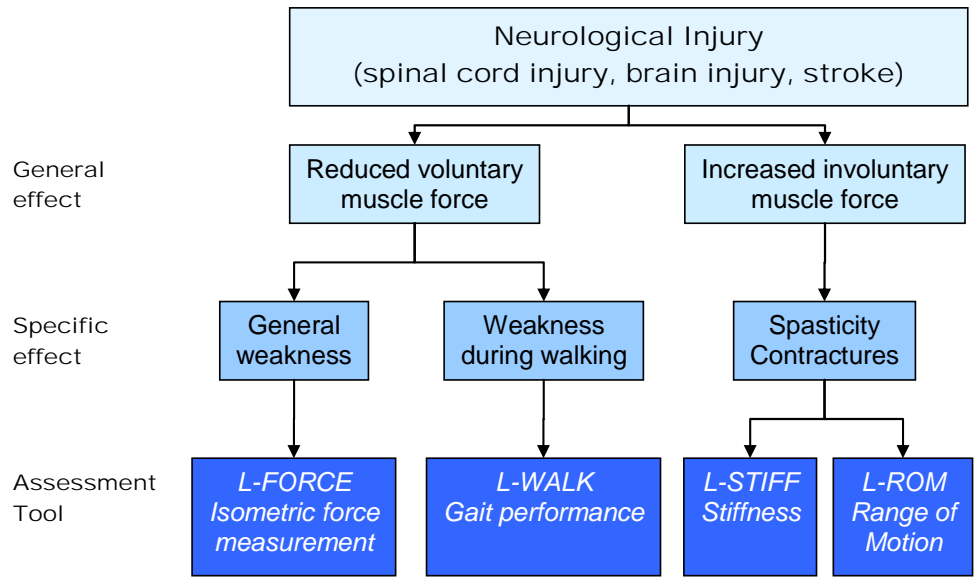
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Robotic gait devices become successively more established to treat individuals with a locomotor dysfunction such as spinal cord injury, stroke and traumatic brain injury. A widely used device is the driven gait orthosis “Lokomat”. This rehabilitation robot supports patients with neurological gait disorders during automated treadmill therapy by guiding their leg movements. It has been developed at Balgrist University Hospital, Zurich, and is produced by Hocoma AG (www.hocoma.com, Volketswil / Zurich, Switzerland).

In this project, software is developed and clinically validated to train and assess the physiological and neurological status of the patients. The robot can now be used to measure spasticity (i.e. pathological increased muscle tone), isometric voluntary muscle force and range of motion; which are factors possibly affected by the neurological injury. These new tools will provide a standardized, easy-to-use method for documenting rehabilitation progress by robot-assisted quantitative measurement. It should therefore improve training quality and deliver better documentation for “management-by-objectives” rehabilitation, as well as reporting to insurances.



The Robotic Orthosis Lokomat



Neurological Injury and Assessment Tools