Robot-assisted gait rehabilitation: from guided to challenging walking

KTI Projekt Nr. 17567.2 PFLS-LS

1. Mai, 2015 Start
30. April, 2018 End

Timeline: 36 months

Project goals
Enhance gait therapy for patients and therapists by
1. improving hardware and use of prototype device
2. development of new training modes based on gait analysis
3. implementation of motivating VR scenarios

State of the art: robotic gait training
- established gait therapy
- reduce burden on therapists
- safe and intensive
- early ambulation
- no training of daily challenges
- few, spatially limited tasks
- preclude active participation
- unrestricted over-ground walking
- supplies BWS in 4-dimensions
- fall prevention

Scientific Innovation

Training modes
Multidirectional overhead body-weight support (BWS) system The FLOAT
- enables unrestricted over-ground walking
- supplies BWS in 4-dimensions
- fall prevention

Trainable with FLOAT

Clinical feasibility study
Pilot study with iSCI patients
- validate feasibility of 3D gait rehabilitation
- underline importance of new training modes
- assess potential to increase outcome after CNS injury
- prove easiness of application for therapists

Business Potential

1. New form of gait training
New benchmark for BWS gait training

2. Improve therapy outcomes
AND reduce health care costs

3. Large target population
Incidences / year (EU & USA)

Neurological motor impairments
- Trainable with FLOAT

- Stroke
- Multiple Sclerosis
- Parkinson
- Spinal Cord Injury

- Large yearly increase of new cases of neurological patients
- Much larger group of chronic patients
- Other patients requiring BWS training

36 months

4. Applicable for children
Increased motivation through combination of
virtual reality therapy

Literature
1. Harkema et al., 2012
2. Dietz, 2009
3. Musselman et al., 2011
4. Dominici et al., 2012
5. Vallery et al., 2013