CTI – Start-up and Entrepreneurship, R&D Funding, KTT Support

CTI Medtech Event 2015

Robot-assisted gait rehabilitation: from guided to challenging walking

KTI Projekt Nr. 17567.2 PFLS-LS

Der Balgrist + LUTZ MEDICAL ENGINEERING

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Timeline: *1. Mai, 2015* **Start** — 36 months — *30. April, 2018* **End**

Background

Extensive locomotor training is essential[1] to relearn walking

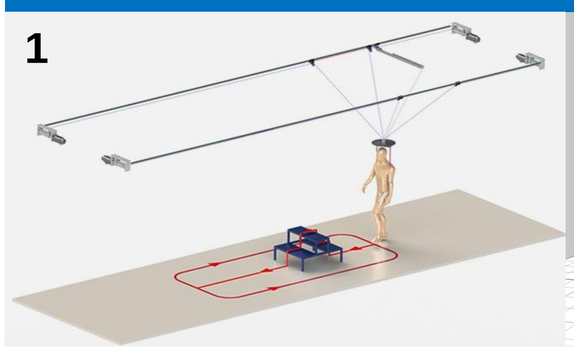
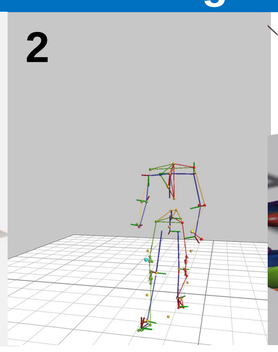
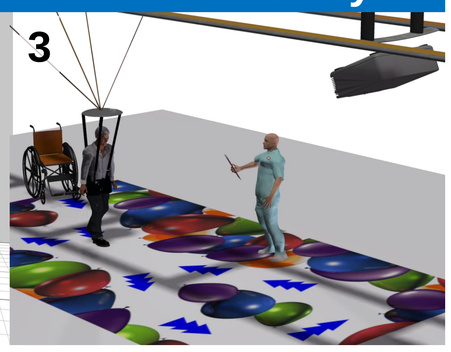
- provides damaged networks with **functional input**
- **promotes plasticity** in remaining intact circuits

State of the art: robotic gait training

Project goals

Enhance gait therapy for patients and therapists by

1. **improving hardware and use** of prototype device
2. development of **new training modes** base on gait analysis
3. implementation of **motivating VR scenarios**

Mechanics	Tracking	Virtual Reality
1 	2 	3 

Scientific Innovation

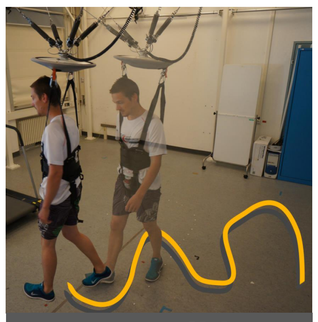
Training modes

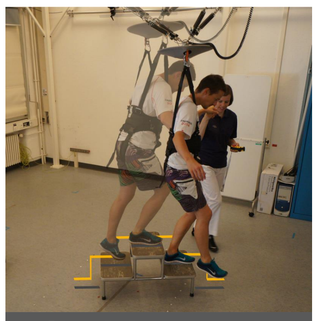
Multidirectional overhead body-weight support (BWS) system **The FLOAT**[5]

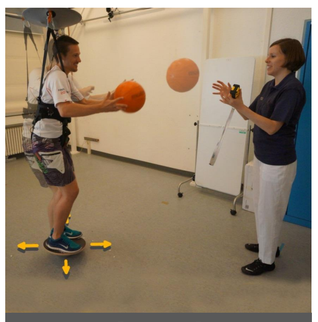
- enables **unrestricted** over-ground **walking**
- supplies **BWS in 4-dimensions**
- **fall prevention**

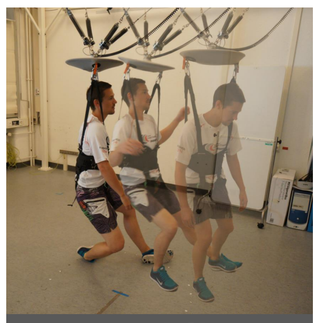
⇨ ***training of everyday walking tasks***


Sit and stand


Free walking


Climbing stairs


Balancing


Stumbling

Clinical feasibility study

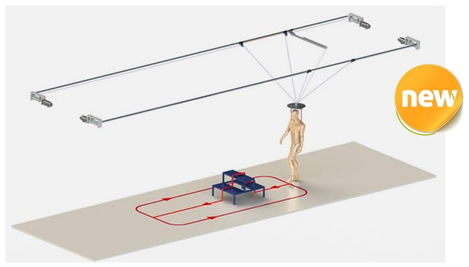
Pilot study with iSCI patients

- 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

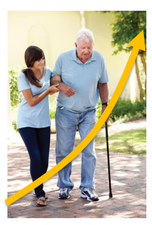
Business Potential

1. New form of gait training

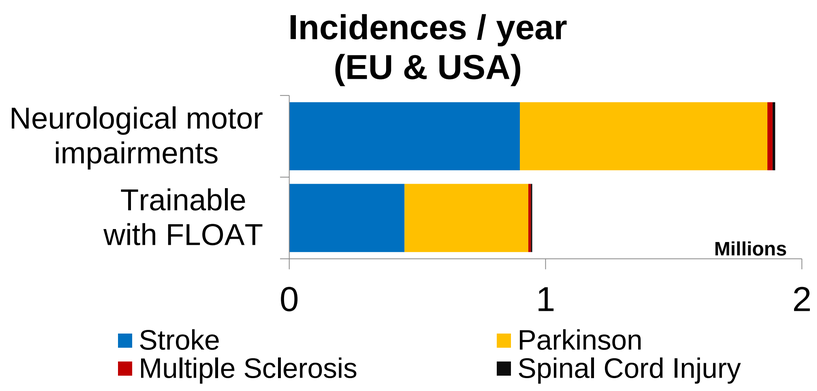
New benchmark for BWS gait training



2. Improve therapy outcomes AND reduce health care costs


&


3. Large target population



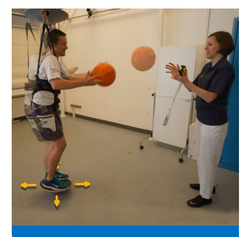
- Large yearly increase of new cases of neurological patients
- Much larger group of chronic patients
- Other patients requiring BWS training

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

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