# The Impact of the Innowalk Pro on Patient Orientated Goals Hyperacute Neurorehabilitation - Case Study

Dawn Freilinger, Physiotherapist; Cath Sweby, AHP Consultant Neurorehabilitation

Contact Information: Neurorehabilitation, Salford Royal Hospital, 0161 206 2379

### Introduction

The Innowalk Pro 1 (Made for Movement), an innovative robotic dynamic standing device enabling cycling movements in a weight bearing position, comparable to walking (1). Research focuses on Cerebral Palsy, showing improvements in quality of life, & physical & mental health (2,3,4).

## **Background**

56-year-old male with a history of extensive left hemisphere intracranial haemorrhage. Initial admission to hyper-acute neurorehabilitation, ward C2, 6 weeks post admission (& post-operatively). Return to ICU in status epilepticus 8 weeks later. Readmitted to hyper-acute neurorehabilitation following 10 days ICU admission.

#### **IMPAIRMENTS**

Right sided weakness and atrophy **Spasticity** Pain and hypersensitivity **Sensory and visual neglect Cognitive deficits** 

**Impacting** 

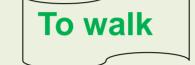
**Pusher syndrome** 

#### **ACTIVITY AND PARTICIPATION**

Unable to maintain sitting balance Not tolerating use of tilt table Poor tolerance of handling **Hoist transfer** Lack of engagement







To play board/card games with family

12 weeks following initial admission to ward C2: NOT ACHIEVING GOALS – Minimal improvement in impairment and activity-based outcomes. Team and family agreed to introduce the Innowalk following BIM.

### Aim

To evaluate the impact of the Innowalk on achievement of functional and impairment-based outcome measures, and attainment of patient orientated goals.

Method =

Innowalk utilised within therapy regime over 7week period

25<sup>th</sup> April

12<sup>th</sup> June

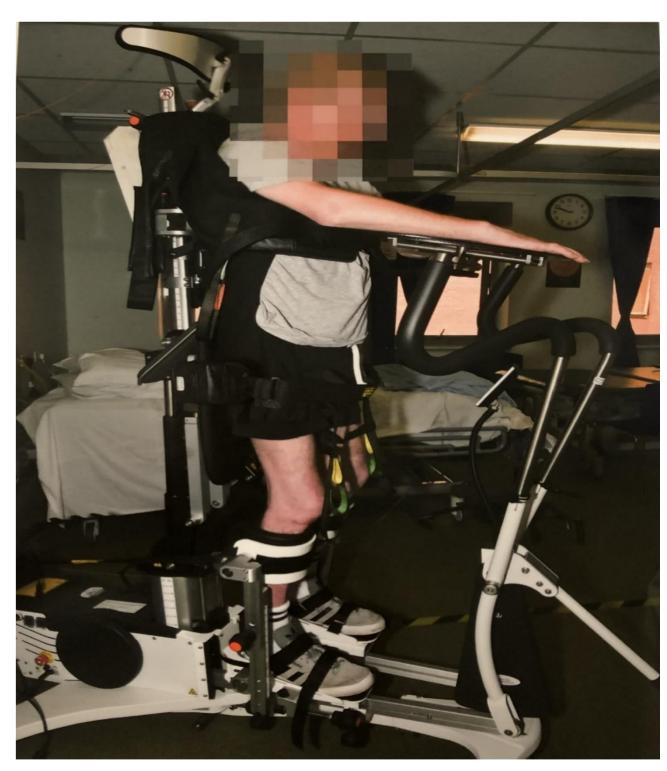
13 sessions



# Results

Goal	Start Point	Outcome
To consistently tolerate 30-minute therapy sessions	Intermittently engaging in 10-minute therapy sessions. Often refusing	Consistently engaging in 60-minute therapy sessions. Enjoyment 12/10
To reduce pain from 10/10 to 5/10 NRS	10/10 NRS (Numeric Rating Scale)	2/10 NRS
To sequence grooming task, sitting in supportive seating with verbal & tactile cues only	Required assistance of 1 to complete grooming task	Able to complete grooming task in supportive seating with verbal cueing only
To achieve full therapeutic stand with assistance of 3 and maintain for 1 minute	Unable to stand, required tilt table	Achieved Bipedal stance with assistance of 2-3 for 3 minutes adding weight transference work
Increase passive range of motion at Right knee by 10 degrees	Range of motion Right knee: 120/20/0	Range of motion Right knee: 120/10/0
To be able to sit in supportive seating and play one board or card game with family daily	Inconsistently attempting to play games, agitation & mood impacting	Able to sit in supportive seating and play several board and card games daily with family
To be able to transfer using sara stedy with assistance of 3 in therapy	Hoist transfer with assistance of 2	Able to transfer using sara stedy with assistance of 2 in therapy
Increase power in Right hip and knee from 1/5 & 0/5 respectively to 2/5 MRC	Power Right hip 1/5 MRC (Medical Research Council) Power Right knee 0/5 MRC	Power Right hip 3/5 MRS Power Right knee 3/5 MRS
Long term patient goal: To be able to walk	Unable	Mobilised on Body de-weighting system with AFO Right and facilitation to step
waik		with AFO Right and facilitation to step

1. Hancock, N. J., Shepstone, L., Rowe, P., Myint, P. K., & Pomeroy, V. (2011). Clinical efficacy and prognostic indicators for lower limb pedalling exercise early after stroke: Study protocol for a pilot randomised controlled trial. Trials, 12(1), 1-12



### Conclusion

After a period with minimal physical improvement, poor engagement, and nil goal attainment. Two of three patient driven goals were achieved when the Innowalk was utilised as the main component of the rehabilitation programme. Additionally, the increased intensity of rehabilitation supported maintaining a stable chest post tracheostomy decannulation, one month earlier.

### **Impact**

Consider the use of robotics as part of a rehabilitation programme to achieve patient goals at a faster pace than traditional rehabilitation alone. Weight bearing can be sustained for longer periods with the addition of increased intensity and frequency of therapy which may positively impact other aspects of rehabilitation. Further research is indicated reviewing the impact of the Innowalk on hemiparesis/hemiplegia secondary to brain injury.

<sup>2.</sup> Lauruschkus, K., Jarl, J., Fasth Gillstedt, K., & Tornberg, Å. B. (2022). Dynamic Standing Exercise in a Novel Assistive Device Compared with Standard Care for Children with Cerebral Palsy Who Are Non-Ambulant, with Regard to Quality of Life and Cost-Effectiveness. Disabilities, 2(1), 73-85 Schmidt-Lucke, C., Käferle, J., Berner, B. M. R., Ahlborg, L., Hansen, H. M., Tollefsen, U. S., ... & Lauruschkus, K. (2019). Effect of assisted walking-movement in patients with the motorised Innowalk device: an international case study meta-analysis. PeerJ, 7, e7098 4. Tornberg, Å. B., & Lauruschkus, K. (2020). Non-ambulatory children with cerebral palsy: effects of four months of static and dynamic standing exercise on passive range of motion and spasticity in the hip. PeerJ, 8, e8561