

John Brincks, Poul Mogensen and Jørgen Feldbæk Nielsen,
Hammel Neurorehabilitation- and Research Center, Aarhus University Hospital.

Background and Aim

Gait rehabilitation with conventional physical therapy or partial body weight supported treadmill training improves gait function equally in patients with stroke. Recently published pilot studies indicates superior gait function and gait symmetry mainly in non-ambulatory stroke patients after practising on the Lokomat compared to conventional physical therapy. The effect is blurred by absent description of the control intervention.

We wish to investigate the effects on walking capability of the lokomat gait orthosis compared with categorized gait training by physical therapists in ambulatory stroke patients.

Materials and Methods

- Stroke patients able to walk with or without a stick at walking speed less than 0.5 m/s.
- Middle cerebral artery infarction
- A single-blinded cross-over study bloc-randomized by 4 to two treatment modalities by concealed envelopes: A-B and B-A.
- *Phase A* Includes 30 minutes gait rehabilitation in the Lokomat every weekday for 3 weeks. The Lokomat has three main parameters to adjust gait training; gait speed, body weight support (BWS) and guidance force (GF; assistance to facilitate movement of the legs). In phase A the training approach gradually decreases BWS and GF in week 1 and 3 respectively and increases gait speed in week 2 as much as possible.
- *Phase B* includes 30 minutes physical therapy gait training every weekday for 3 weeks. This is hieratic classified in four categories where personal support and facilitation by the therapist decreases and demands to perception and cognition increases.
- Lokomat training and physical therapy training aims to retain a normal gait (no knee bending, adequate ankle dorsiflexion and hip extension and trunk alignment). Additional 30 minutes of physical therapy practise is given every weekday. This training focus on other physical impairments besides gait deficit.
- Primary outcomes are 10 meters walking test and 6 minutes walking test at preferred speed, and single leg stance during gait (SLS) on hemiparetic leg analyzed in a gait lab.

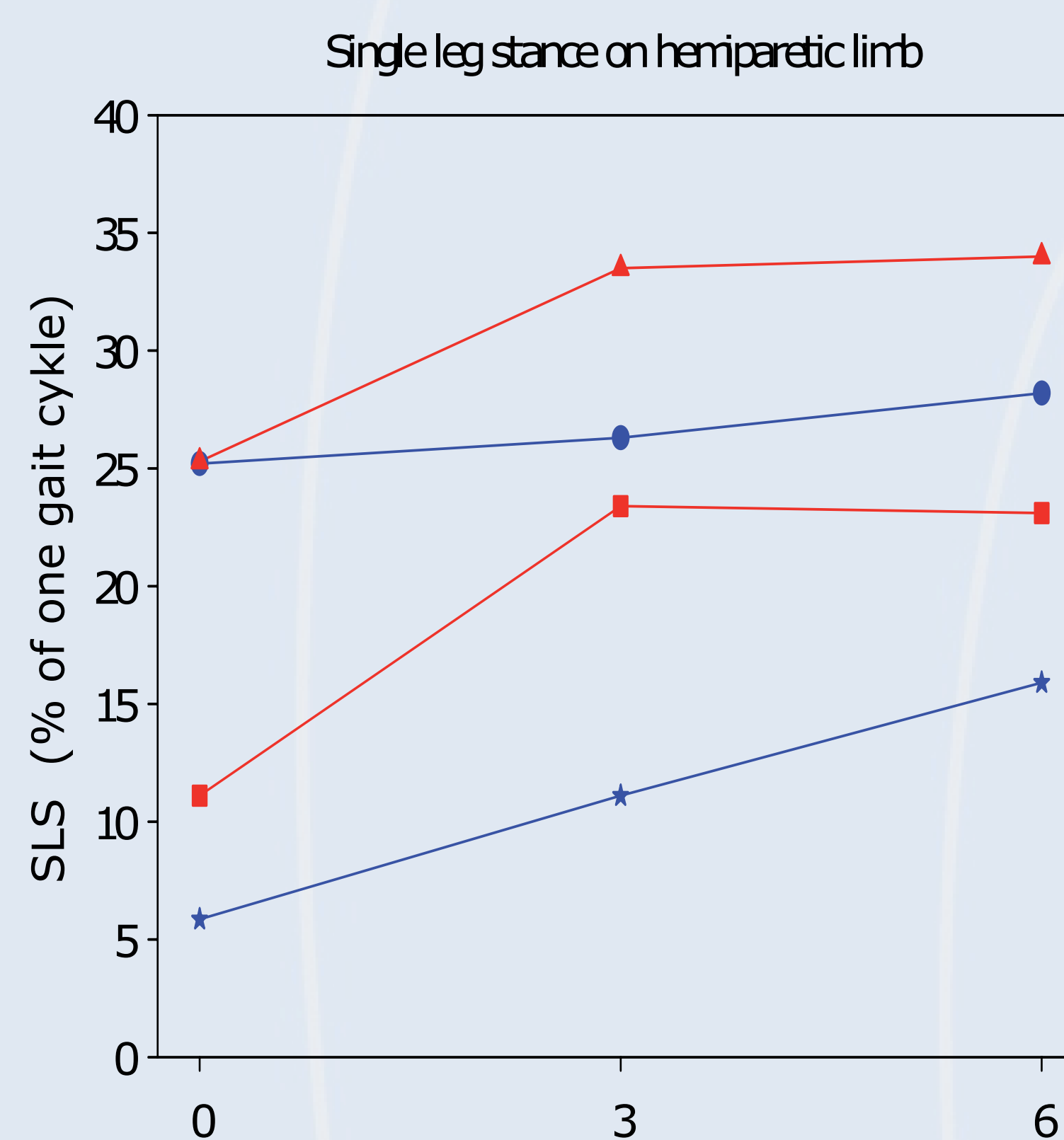
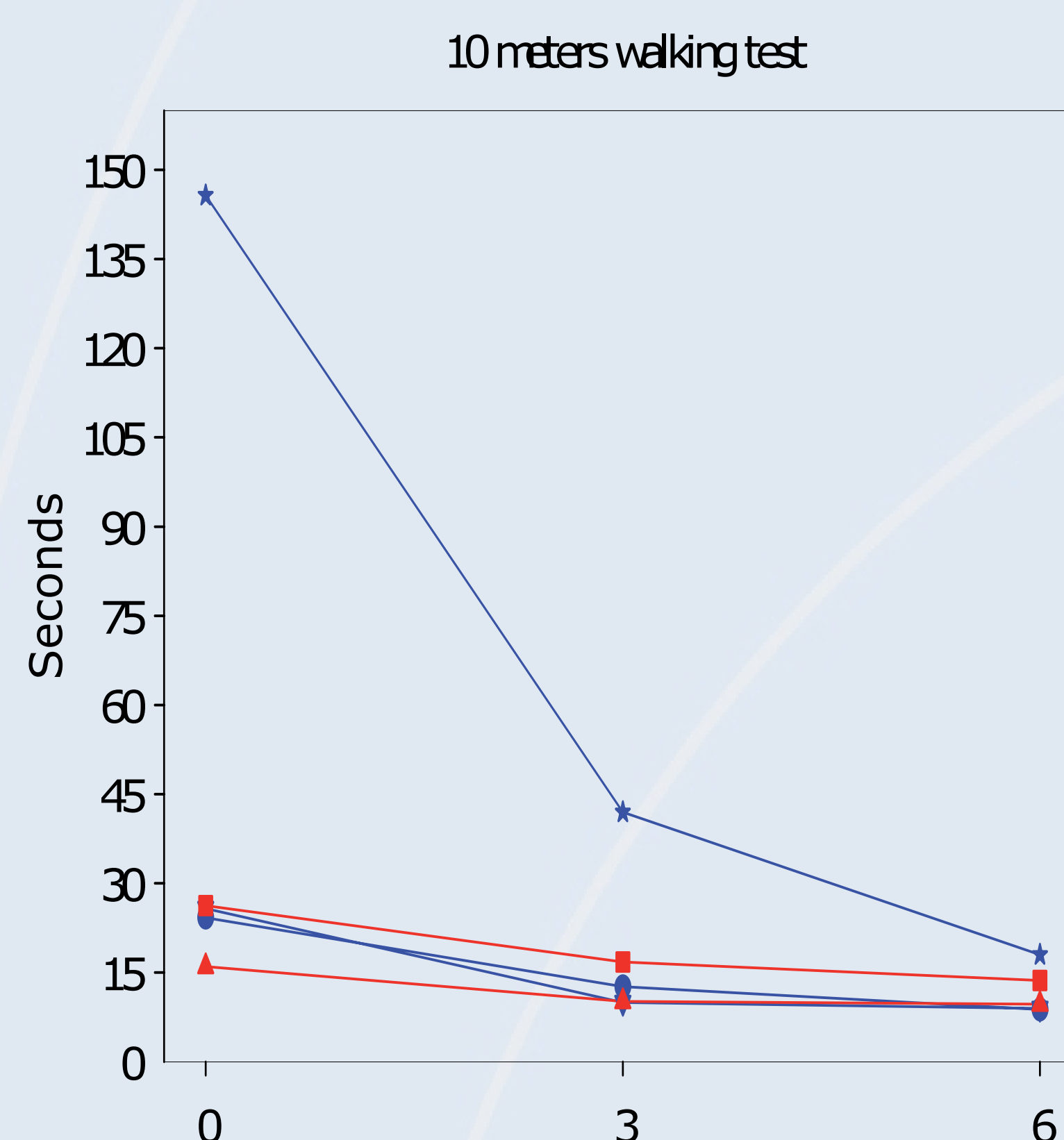


Fig. 1. Study results of 10 Meters Walking Test, 6 Minutes Walking Test and Single Leg Stance for both gait interventions

Preliminary results

- Five participants has been included and no injury was reported during interventions.
- Results indicates an increase in preferred gait speed, gait distance and single leg stance on the hemiparetic limb in both in intervention modalities, A-B and B-A (figures).
- Main improvements seems to occur from week 0 to 3 for both modalities with an overweight in improvement favouring the Lokomat training concerning gait speed and distance but not single leg stance.



Fig. 2. Lokomat

Conclusion

- No difference in walking capability was indicated when comparing Lokomat training with categorized gait training in ambulatory patients early post-stroke.
- Lokomat training may prove to be superior of categorized gait training in early gait rehabilitation, week 0 to 3, whereas categorized gait training may be superior relating to gait symmetry.