

ANKLE-FOOT ORTHOSES IN STROKE REHABILITATION: WHAT IS THE RIGHT TIMING?

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BACKGROUND

Ankle-foot orthoses (AFOs) are frequently used in the rehabilitation after stroke. However, in scientific literature little is known about the long-term use of AFOs in the stroke population. Especially research studying the optimal time-point to start using AFOs is lacking. To our knowledge this is the first longitudinal research studying the effects of timing of providing AFOs in patients with stroke. Both positive and possible adverse effects like disuse are measured to give insight into the effects of AFOs after stroke.



Three different AFO-types which vary in stiffness are used in the study. Based on a predefined protocol one of the included types is provided to the subject. (pictures from Basko Healthcare)

GOAL

The goal of this research is studying the effects of different moments of AFO-provision in early stroke patients on walking impairments, mobility, activities of daily living and falls. Providing AFOs as soon as possible after admission into the rehabilitation centre (2-4 wks post stroke) is compared with providing AFOs 8 weeks later.

PATIENTS

Acute stroke patients admitted to the Roessingh Rehabilitation Centre with an AFO-indication because of problems with stability in stance, foot-clearance or foot prepositioning during swing are included. Based on the specific problems one of three (see picture) AFO-types is provided according to a predefined protocol.

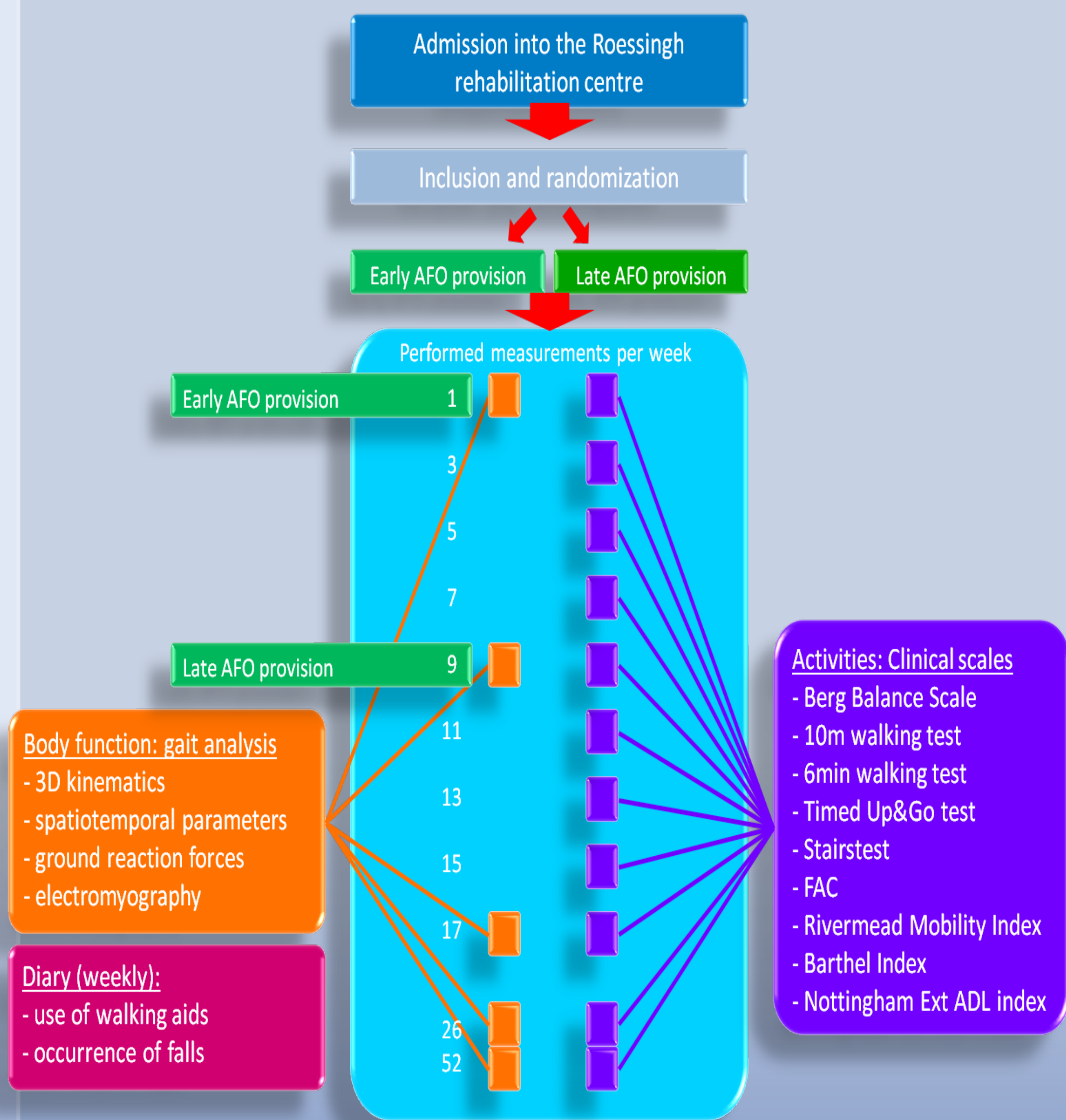
DESIGN

In this longitudinal research subjects are randomized in either the "early" (providing AFO at inclusion) or "late" (providing AFO 8 weeks after inclusion) intervention group. Subjects are measured frequently during 18 weeks, with follow-up measurements after 26 and 52 weeks (see flowchart on the left).



During gait analysis kinematics of pelvis, hip, knee, ankle and foot of both lower limbs are measured while walking with and without AFO.

Spatiotemporal parameters and ground reaction forces are registered. Muscle activity (m. rectus femoris, m. vastus lateralis, m. tibialis anterior, m. semitendinosus and m. gastrocnemius medialis) is measured on both sides.



Flowchart of inclusion performed measurements: AFOs are provided in week 1 (early group) or week 9 (late group) of the study. Both groups perform the same measurements on the ICF-levels "body function" and "activities" which are repeated frequently. A diary is kept weekly.

METHODS

The effects are measured on different levels of the International Classification of Functioning, Disability and Health (ICF).¹ Walking impairments (ICF-level body functions) are assessed using gait analysis. Subjects are measured while walking at comfortable speed, with and without AFO. Effects on mobility and activities of daily living (ICF-level activities) are measured using several clinical scales. Furthermore, a diary is kept to report falls and the use of walking aids.

CONCLUSION

This is the first research which focuses on the effects of timing of providing AFOs after stroke. Both the positive and possible adverse effects (e.g disuse) are studied in a longitudinal design to give insight into the therapeutic effects of AFOs. The results of this study will provide clinicians with scientific information about when to start AFO-treatment and evidence for the long-term effects of AFOs in rehabilitation after stroke.



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