

Walk On



Quality for life

Clinical Study Summaries

This document summarizes clinical studies conducted with the Walk On. The included study was identified by a literature search made on PubMed and within the journals Orthopädie-Technik, Medizinisch Orthopädische Technik, Neurologie & Rehabilitation and Journal of Pediatric Orthopaedics.

Table of content:

1 Overview table	p 2
2 Summary of individual study	p 3-7
Pradon et al. 2011	p 4
3 Copyright	p 8

1 Overview table

The summaries are organized in three levels depending on the detail of information. The overview table (Level 1) lists all the relevant publications dealing with a particular product (topic) as well as researched categories (e.g. gait analysis, clinical effects, satisfaction, etc). By clicking on underlined categories, a summary of all the literature dealing with that category will open (Level 2).

For those interested to learn more about individual studies, a summary of the study can be obtained by clicking on the relevant reference (Level 3).

Reference		Category						
		Functions and Activities						Participation
Author	Year	Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction
<u>Pradon</u>	2011		x					
Total number: 1		0	1	0	0	0	0	0

2 Summary of individual study

On the following pages you find the summary of the study that researched Walk On. You find detailed information about the study design, methods applied, results and major findings of the study. At the end of the summary you also can read the original study authors' conclusions.

Reference

Pradon, D., Hutin, E., Khadir, S., Taiar, R., Genet, F., & Roche, F.

CHU Raymond Poincaré, Laboratoire d'Analyse du Mouvement, Garches, France.

A pilot study to investigate the combined use of Botulinum toxin type-a and ankle foot orthosis for the treatment of spastic foot in chronic hemiplegic patients

Clinical Biomechanics 2011; 26: 867-872.

DOI: 10.1016/j.clinbiomech.2011.04.003

Products

Walk On additionally to Botulinum toxin (BoNTA)

Major Findings

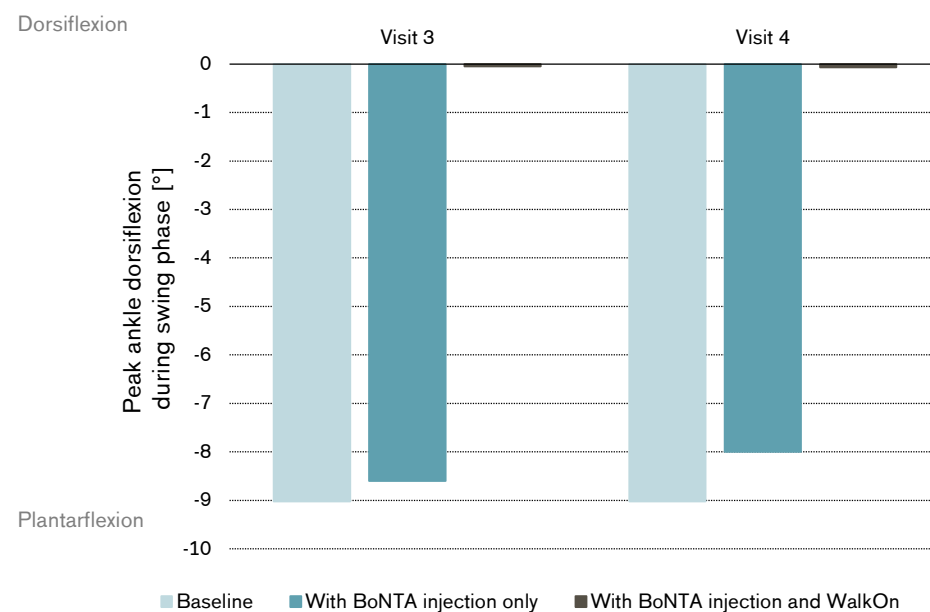
With **BoNTA injection and use of Walk On** compared to BoNTA injection only:

- Increase in peak ankle dorsiflexion during swing phase
- Increase in peak plantarflexion moment

With **Botulinum toxin injection (BoNTA injection)** compared to no treatment:

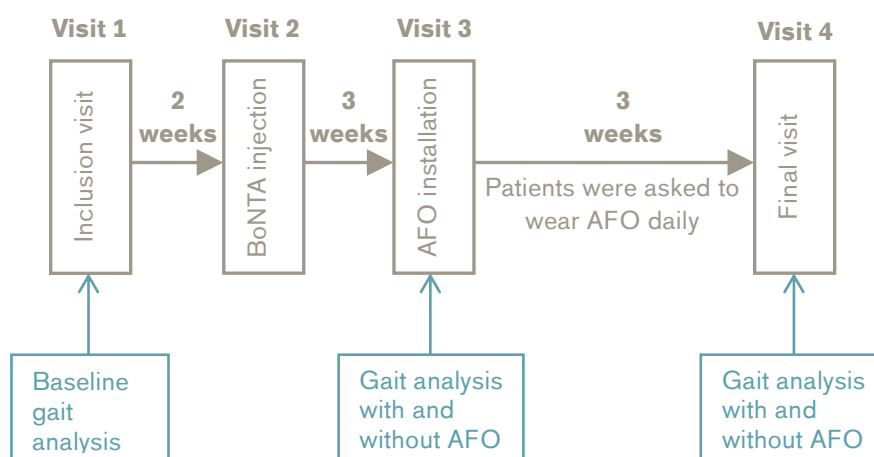
- Increase in gait velocity
- Increase in peak ankle dorsiflexion during stance phase
- Increase in peak knee flexion during swing phase
- Increase in peak plantarflexion moment

Walk On significantly increased peak dorsiflexion during swing phase



Population	Subjects:	8 chronic hemiplegic subjects following stroke 6 male, 2 female 5 right hemiplegia, 3 left hemiplegia
	Mean age: Inclusion criteria:	45 years - hemiplegia following stroke (occurring more than 6 months prior to study participation) - spasticity of the triceps surae muscle (1-3 modified Ashworth scale): abnormal electromyogram (EMG) during the swing phase of gait - equinus foot during gait - at least 10 m independent walking without assistive devices - last BoNTA injection at least 4 months prior to study participation

Study Design Pilot study



Results

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction

Category	Outcomes	Results for BoNTA injection + Walk On (compared to BoNTA injection only)	Sig.*
Biomechanics – Gait analysis	Kinematic parameters		
	Peak ankle dorsiflexion during stance phase	No significant differences between BoNTA only and combined use of BoNTA + AFO during visits 3 and 4	0
	Peak ankle dorsiflexion during swing phase	Significant increase by 99.4% due to AFO use during visit 3 (from -8.6° to -0.05° Plantarflexion)	++
		Significant increase by 99.1% due to AFO use during visit 4 (from -8.0° to -0.07° Plantarflexion)	++
	Peak knee flexion during swing phase	No significant differences between BoNTA only and combined use of BoNTA + AFO during visits 3 and 4	0

Dynamic parameters		
Peak plantarflexion moment (PPFM)	Significant increase by 13.5% due to AFO use during visit 3 (from 0.89 Nm/kg to 1.01 Nm/kg)	++
	No significant increase due to AFO use during visit 4	0
Spatio-temporal parameters		
Gait velocity		
Step length (non-paretic side)	No significant differences between BoNTA injection only and combined use of BoNTA and AFO at visits 3 and 4	
Step length (paretic side)	3 and 4	
Stride length		

* no difference (0), positive trend (+), negative trend (-), significant (++)/(-), not applicable (n.a.)

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction
Category	Outcomes	Results for BoNTA injection only (compared to baseline)				Sig.*
Biomechanics – Gait analysis	Kinematic parameters					
	Peak ankle dorsiflexion during stance phase	Significant increase by 36.1% during visit 3 (from 10.8° to 14.7°)				++
		Significant increase by 44.4% during visit 4 (from 10.8° to 15.6°)				++
	Peak ankle dorsiflexion during swing phase	No significant change during visit 3				0
		No significant change during visit 4				0
	Peak knee flexion during swing phase	Significant increase by 18.3% during visit 3 (from 30.5° to 36.08°)				++
		Significant increase by 34.1% during visit 4 (from 30.5° to 40.9°)				++
		Significant increase by 13.4% from visit 3 to visit 4 (from 36.08° to 40.9°)				++
	Dynamic parameters					
	Peak propulsive force	Significant increase by 30.5% during visit 3 (from 0.059 N/kg to 0.077 N/kg)				++
		Significant increase by 42.4% during visit 4 (from 0.059 N/kg to 0.084 N/kg)				++
	Peak plantarflexion moment (PPFM)	No significant increase during visit 3				0
		Significant increase by 36% during visit 4 (from 0.75 Nm/kg to 1.02 Nm/kg)				++
	Spatio-temporal parameters					
	Gait velocity	Significant increase by 20% during visit 3 (from 0.55 m/s to 0.66 m/s)				++
	Significant increase by 30.9% during visit 4 (from 0.55 m/s to 0.72 m/s)				++	
	No significant differences between visits 3 and 4				0	

Step length (non-paretic side)	Significant increase by 15.9% during visit 3 (from 0.44 m to 0.51 m)	++
	Significant increase by 18.2% during visit 4 (from 0.44 m to 0.52 m)	++
	No significant differences between visits 3 and 4	0
Step length (paretic side)	Significant increase by 12.8% during visit 3 (from 0.39 m to 0.44 m)	++
	Significant increase by 17.9% during visit 4 (from 0.39 m to 0.46 m)	++
	No significant differences between visits 3 and 4	0
Stride length	Significant increase by 15.5% during visit 3 (from 0.84 m to 0.97 m)	++
	Significant increase by 17.9% during visit 4 (from 0.84 m to 0.99 m)	++
	No significant differences between visits 3 and 4	0

* no difference (0), positive trend (+), negative trend (-), significant (++)/(-), not applicable (n.a.)

Author's Conclusion

"In conclusion, the results of this preliminary study indicate that combined BoNTA injection of the triceps surae and wearing an AFO is more effective than use of BoNTA only. BoNTA injection into the triceps surae improves the gait of patients by increasing ankle dorsiflexion in stance phase, as well as the PPFM. However, BoNTA treatment does not appear to be effective in increasing dorsiflexion during the swing phase. Conversely, use of an AFO increases dorsiflexion of the ankle during the swing phase and does not reduce the benefits gained by use of BoNTA in stance phase. Future studies aimed at quantifying the therapeutic and functional effects of combined BoNTA and AFO are necessary to determine the best management strategy for gait disorders in patients with a motor disability." (Pradon et al., 2011)

[↑ Back to overview table](#)

Copyright:

© 2014, Otto Bock HealthCare Products GmbH ("Otto Bock"). All Rights Reserved. This document contains copyrighted material. Wherever possible we give full recognition to the authors. We believe this constitutes a 'fair use' of any such copyrighted material according to Title 17 U.S.C. Section 107 of US Copyright Law. If you wish to use copyrighted material from this site for purposes of your own that go beyond 'fair use', you must obtain permission from the copyright owner. All trademarks, copyrights, or other intellectual property used or referenced herein are the property of their respective owners. The information presented here is in summary form only and intended to provide broad knowledge of products offered. You should consult your physician before purchasing any product(s). Otto Bock disclaims any liability related from medical decisions made based on this document.