Reference

Hesse, S., Bardeleben, A., Rembitzki, I., Werner, C.

Charité Universitätsmedizin Berlin.

Clinical and Gait Analysis Data on the Shoulder Orthosis OmoNeurexa

(Klinische und ganganalytische Befunde zur Schulterorthese OmoNeurexa)

Orthopädie-Technik 2009; 3: 177-181.Open Access

Products

Omo Neurexa

Major Findings

With Omo Neurexa compared to no orthotic treatment:

→ 50% of patients reported a relevant pain reduction

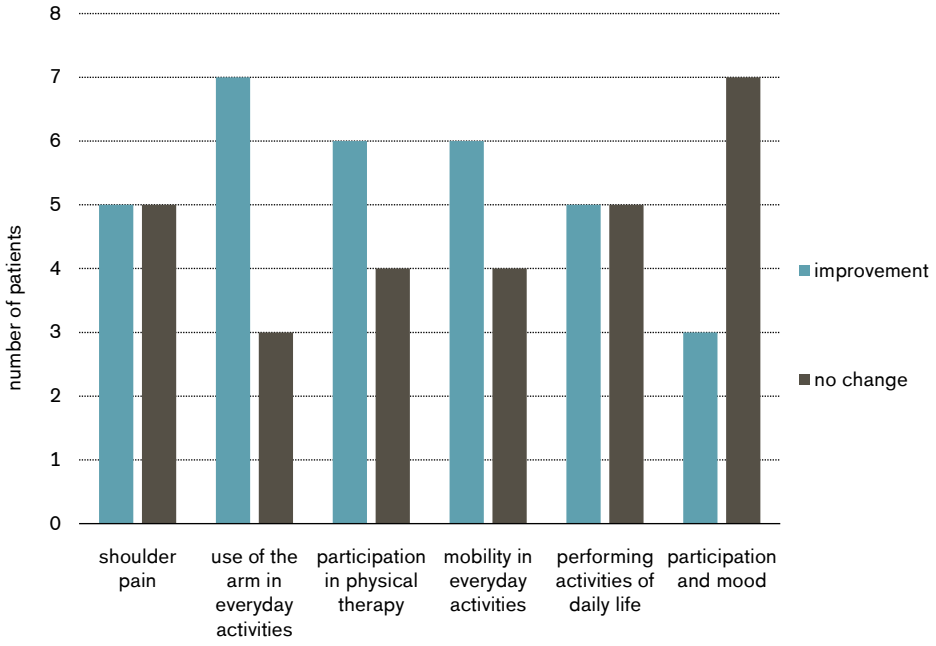
→ Decrease of the shoulder subluxation was observed

→ 70% of patients reported that they felt more secure during transfer tasks and mobility

→ More dynamic gait pattern

→ Good wearing comfort, minimal transpiration

Omo Neurexa showed improvements in majority of categories assessed

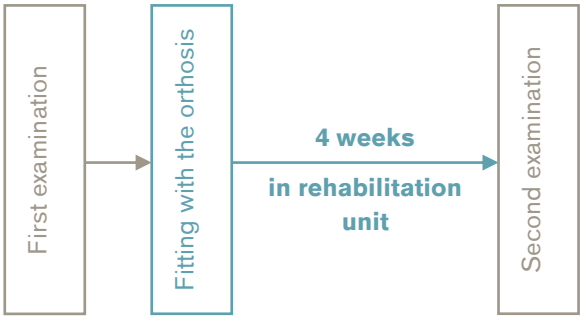


Population

Subjects:	13 patients** (10 men, 3 women) ** 3 patients stopped using the orthosis prematurely
Mean age:	61.7 ± 12 years
Mean interval since stroke (before the orthosis was prescribed):	8.3 ± 3.8 weeks
Inclusion criteria:	- shoulder pain or clinical signs of subluxation - first-ever stroke with treatment in inpatient early rehabilitation - non-functioning paretic upper extremity

Study Design

Pilot Study with a four-week-intervention



Gait analysis and measurement of EMG was performed with 10 patients with and without the orthosis.

Results

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

Category	Outcomes	Results for Omo Neurexa**	Sig.*
Biomechanics – Gait analysis	Relative double support phase	**Mean reduction: 17%**	++
	Stride length	Tendency towards a greater stride length	+
	Cadence	Tendency towards a lower cadence	+
	Gait speed	No significant differences	0
	Relative stance and swing periods	No significant differences	0
	Symmetry quotients	No significant differences	0
EMG	Dynamic EMG	40% of patients showed a more pronounced activity of the quadriceps femoris muscle	n.a.
		40% of patients showed an earlier onset of activity of the quadriceps femoris muscle during the stance phase	n.a.
Functional tests	Passive shoulder ROM	30% of patients showed an improvement	n.a.
		10% of patients showed a deterioration	n.a.
	MRC strength grade	30% of patients showed an increase in shoulder strength	n.a.
		40% of patients showed an increase in elbow strength	n.a.
	Ashworth score	30% of patients showed a decreased Ashworth score (reduction of spasticity)	n.a.
		40% of patients showed an increase in the Ashworth score (development of flexor spasticity)	n.a.
Clinical effects	Joint space	Mean reduction of 2.5cm due to the orthosis (in 70% of patients)	n.a.

Category	Outcomes	Results for Omo Neurexa**	Sig.*
	Pain	50% of patients reported a reduction of shoulder pain	n.a.
		50% of patients reported shoulder pain as unchanged	n.a.

* no difference (0), positive trend (+), negative trend (-), significant (++/--), not applicable (n.a.)
** results are valid for those 10 patients who finished the study

Category	Outcomes	Results for Omo Neurexa***	Sig.*
Satisfaction	Wearing comfort	76.9% of patients: good wearing comfort with only minimal odour build-up	n.a.
		23.1% of patients stopped wearing the orthosis prematurely	n.a.

* no difference (0), positive trend (+), negative trend (-), significant (++/--), not applicable (n.a.)
*** results are valid for all 13 patients who were included in the study

Author's Conclusion

"In summary, the newly developed shoulder orthosis is an interesting component in the prevention and therapy of painful shoulder in severely paretic patients in multiprofessional early rehabilitation. Provided that the nursing staff is given extensive training, good fit, a high level of wearing comfort, and minimal amount of unpleasant odor can be ensured. The open study indicates that the orthosis reduces subluxation and promotes restoration of activity. The results of the gait analysis are consistent with a more secure and dynamic gait; there was also facilitation of the knee extensor on the affected side in some selected patients. A controlled study is indicated." (Hesse et al. 2009)