Omo Neurexa showed improvements in majority of categories assessed

<table>
<thead>
<tr>
<th>Category</th>
<th>Improvement</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder pain</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Use of the arm in everyday activities</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Participation in physical therapy</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mobility in everyday activities</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Performing activities of daily life</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Participation and mood</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

**Major Findings**

- **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**

**Products**

Omo Neurexa

**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)

**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

**Products**

Omo Neurexa

With Omo Neurexa compared to no orthotic treatment:

- **50% of patients reported a relevant pain reduction**
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**Study Design**

Pilot Study with a four-week-intervention

![Study Design Diagram]

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

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### Results

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

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**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 multi-professional 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)