INTRODUCTION

- Patients with spastic hemiparesis after stroke often exhibit limited shoulder movement.
- Study compares the effectiveness of static progressive shoulder splinting (JAS® - Joint Active Systems) with traditional neurophysiological approaches (PNF, Vojta).

OBJECTIVE

Primary
- Changes of external rotation passive range of motion (PROM)

Secondary
- Changes in spasticity (Modified Tardieu Scale)
- Changes of external rotation active range of motion (AROM)

METHODS

- prospective study (2015 - 2017)
- supported by the General Health Insurance Company of The Czech Republic
- approved by the ethics committee
- 23 adults patients at least 1 year after stroke
- randomly assigned to the experimental group A or control group B
- intervention includes 4 weeks of intensive institutional treatment and then 4 weeks of home based self rehabilitation treatment
- group A received static progressive stretching 2 times per day for 30 minutes, 2 times 30sec series of repeated active shoulder flexion and abduction efforts at maximal speed and aerobic activities
- group B received 30 minutes of individual physiotherapy, 30 minutes of occupational therapy and robotic rehabilitation
- assessment performed at the start, 4 and 8 week

RESULTS

- April 2015 until November 2017
- 23 patients
- in comparison of the experimental (n=10) with the control subject (n=13) PROM and AROM of shoulder external rotation was significantly different in both groups

  \[ F_{2, 42} = 7.68, p = 0.001, \]
  \[ F_{2, 42} = 3.51, p = 0.039 \]

- post-hoc analysis showed significant difference between the input and the two subsequent examinations (p < 0.001 in both cases) in the experimental group (Graph 1, 2)
- patients of control group did not achieve any significant increase PROM and AROM
- spasticity was not significantly affected

(Graph 3)

Graph 1 - PROM

Graph 2 - AROM

Graph 3 - spasticity

Basic characteristics of study population

<table>
<thead>
<tr>
<th></th>
<th>Experimental group A</th>
<th>Control group B</th>
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<tbody>
<tr>
<td></td>
<td>Static progressive splinting</td>
<td></td>
</tr>
<tr>
<td>median</td>
<td>58,6</td>
<td>56,3</td>
</tr>
<tr>
<td>SD</td>
<td>15,1</td>
<td>16,5</td>
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<tr>
<td>Age</td>
<td>68,2</td>
<td>58,2</td>
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<tr>
<td>Initial PROM</td>
<td>145,8</td>
<td>150,3</td>
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<tr>
<td>Initial spasticity</td>
<td>114,0</td>
<td>110,9</td>
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<tr>
<td>Initial AROM</td>
<td>34,6</td>
<td>49,4</td>
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</tbody>
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CONCLUSION

- The outcome measures of this study indicate that static progressive splinting may be useful in treating shoulder contracture in patients with spastic hemiparesis compare to traditional rehabilitation.

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