STATIC PROGRESSIVE SPLINTING IN TREATMENT OF HEMIPLEGIC SHOULDER AFTER STROKE - A PROSPECTIVE, RANDOMISED, BLIND, CONTROLLED TRIAL

Michal Riha[1,2], Petra Dvorakova [1], Ondrej Bradac [2], Tereza Sadlova[1]

[1] Department of Physical Medicine and Rehabilitation, Military University Hospital, Prague,

[2] Neurosurgical Department of 1st Faculty of Medicine of Charles University and Military University Hospital, Prague

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 1year 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 recieved 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
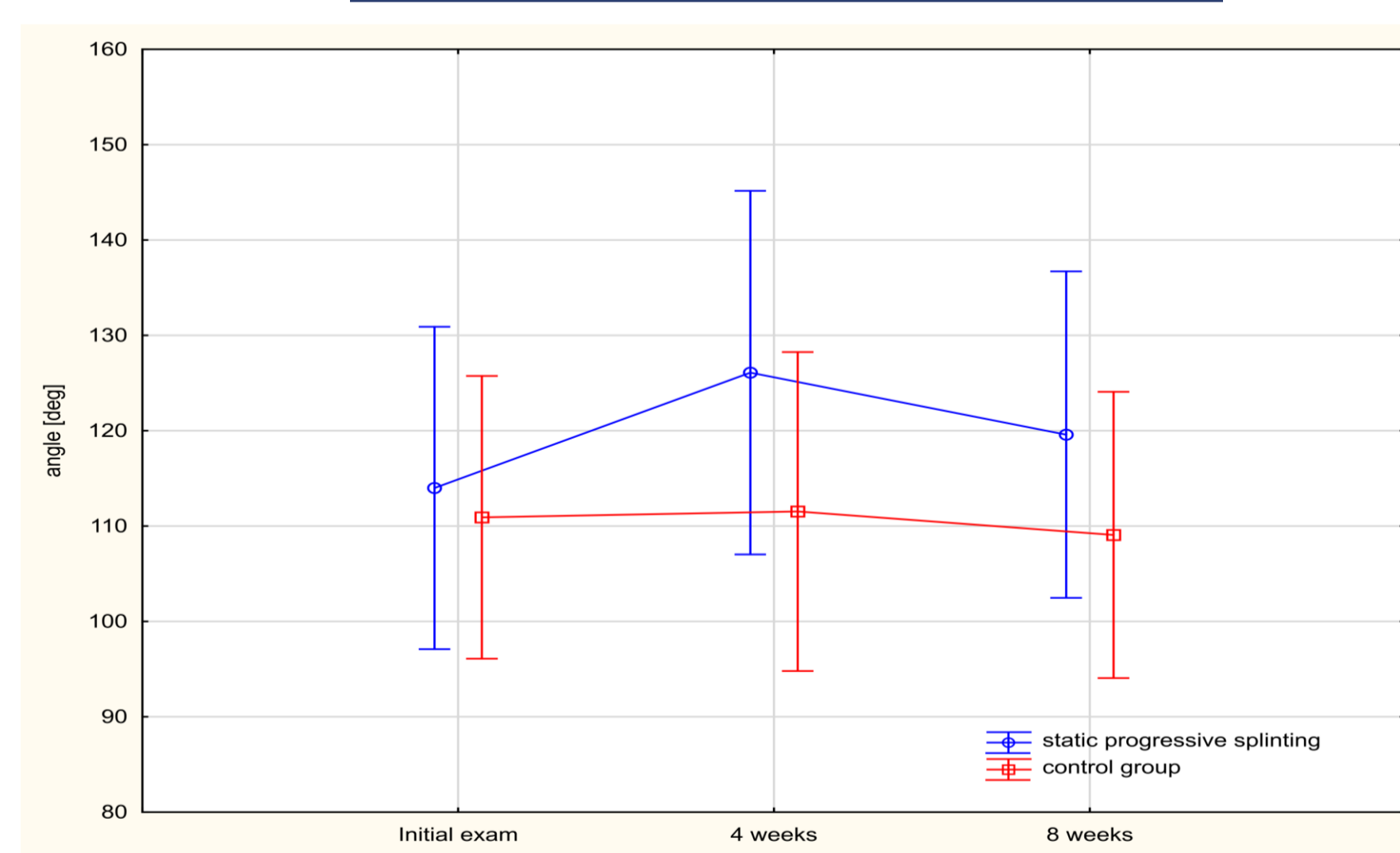- spasticity was not significantly affected (Graph 3)

Graph 1 - PROM
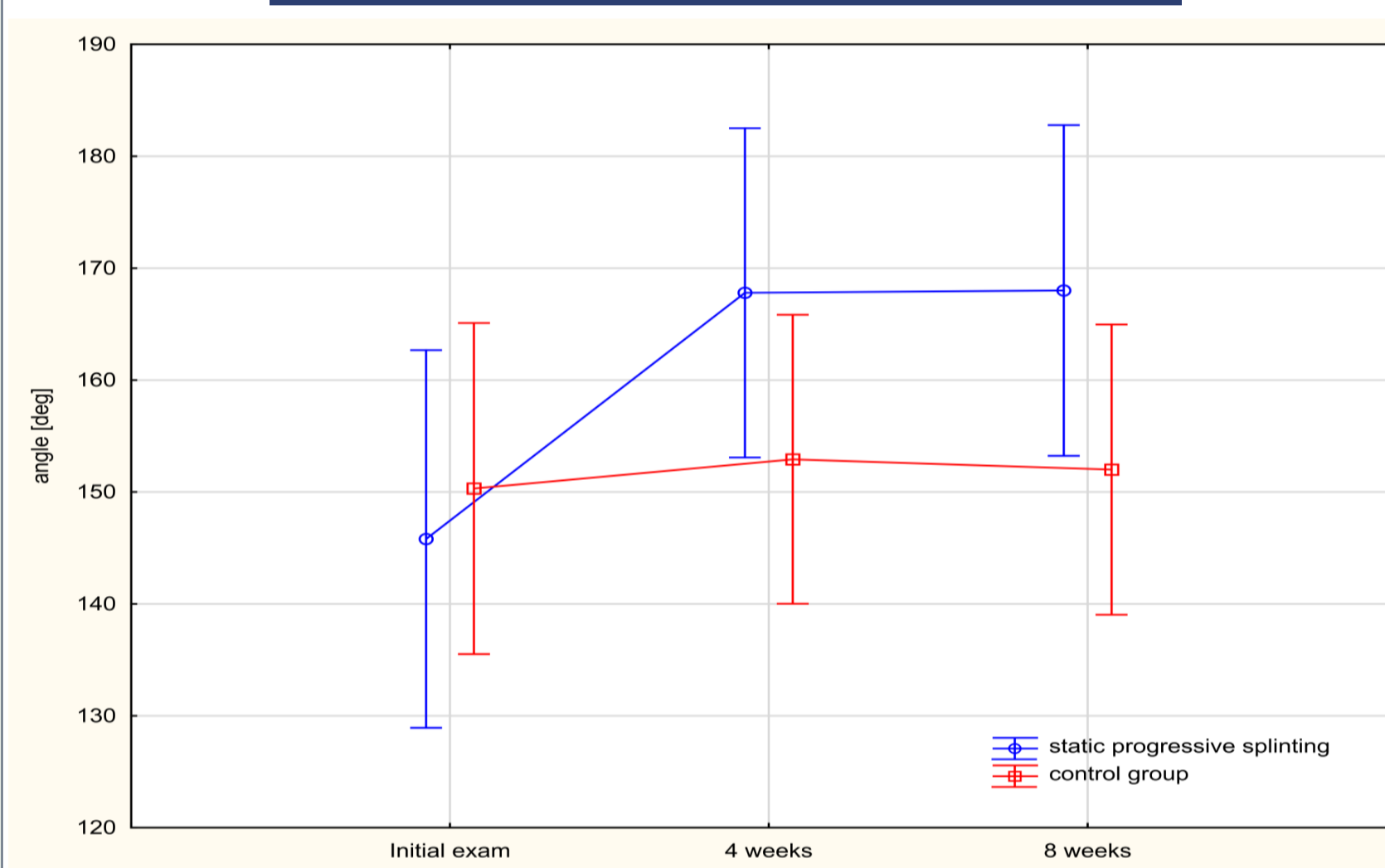
Graph 2- AROM
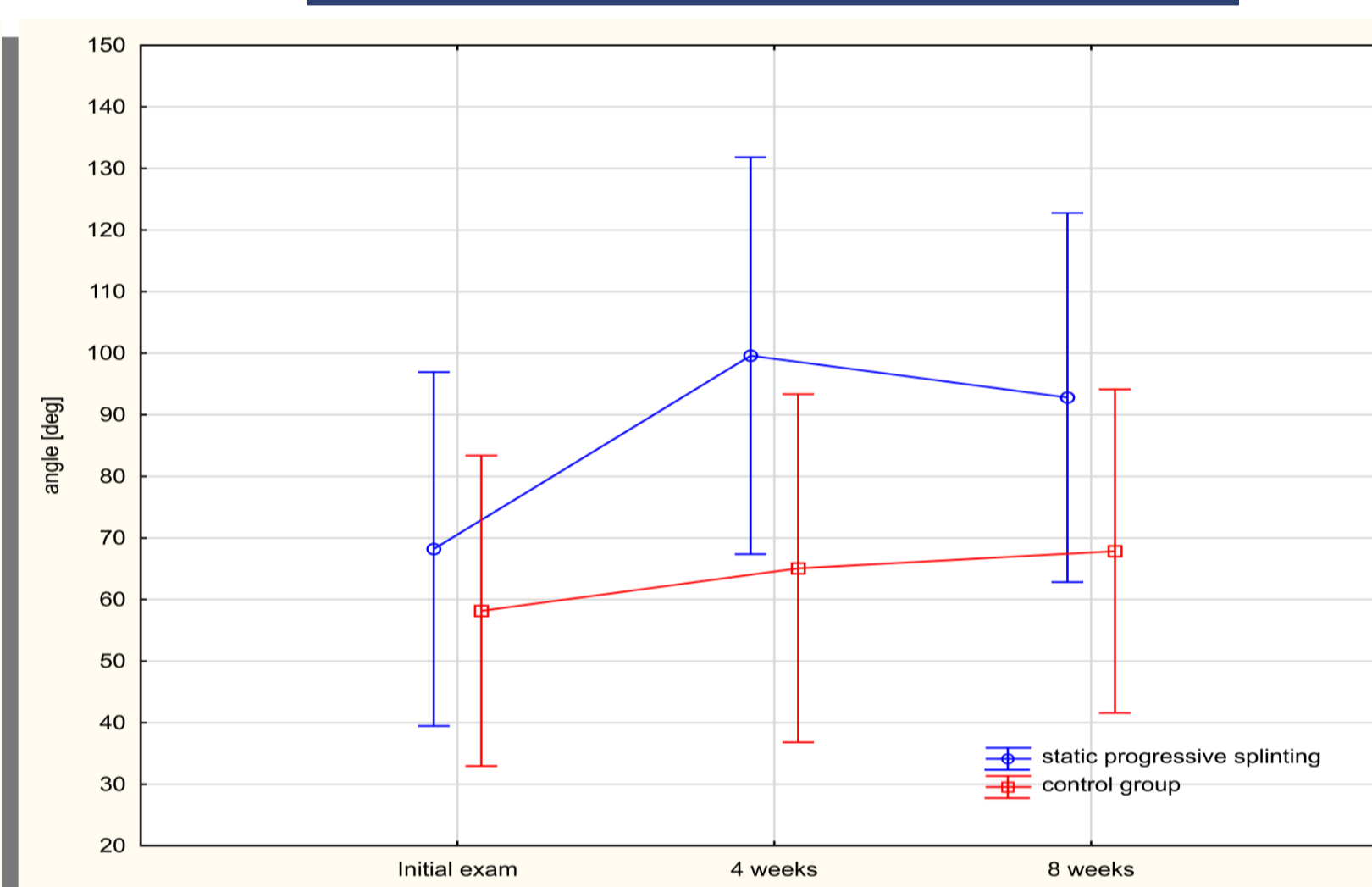
Graph 3 - spasticity

Basic characteristics of study population

	Experimental group A Static progressive splinting		Control group B		
	median	SD	median	SD	p value
Age	58,6	15,1	56,3	16,5	0,727
Initial PROM	145,8	20,7	150,3	28,8	0,680
Initial spasticity	114,0	28,9	110,9	23,0	0,779
Initial AROM	68,2	34,6	58,2	49,4	0,590

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.**

ACKNOWLEDGEMENTS

CONTACT

Dr. Michal Riha, PhD, MBA
Department of Physical Medicine and Rehabilitation
Military University Hospital Prague
U vojenske nemocnice 1200
169 02 Prague 6
Czech Republic
Europe
email: michal.riha@uvn.cz