

# SHORT-TERM CHANGES IN STABILIZATION PARAMETERS AFTER TRIGGER POINT TREATMENT

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Hypertonus and the presence of trigger points (TrPs) in the suboccipital muscles (sOM) frequently contribute to cervical proprioception disorders. Impaired cervical proprioception inevitably affects postural stability, which necessitates therapeutic intervention in conjunction with cervical spine therapy. The aim of this study was to examine the influence of myofascial release technique (MFR) on stability parameters in patients diagnosed with TrPs in the sOM region. Twelve patients (8 females, 4 males, mean age  $37 \pm 9.5$  years) underwent postural stability assessment using a force platform before and after sOM treatment, with a time interval of one hour. The experimental study's objectivity was supported by a control group comprising healthy participants (7 females, 5 males, mean age  $25 \pm 3$  years). The results indicated significant changes in stability parameters immediately after applying the myofascial release technique, particularly in patients with TrPs in the sOM. Therefore, we recommend that patients undergoing MFR treatment maintain a safe position for at least a few minutes to prevent falls and dizziness.

**Table 1** Comparison of stabilometric parameters in the experimental group

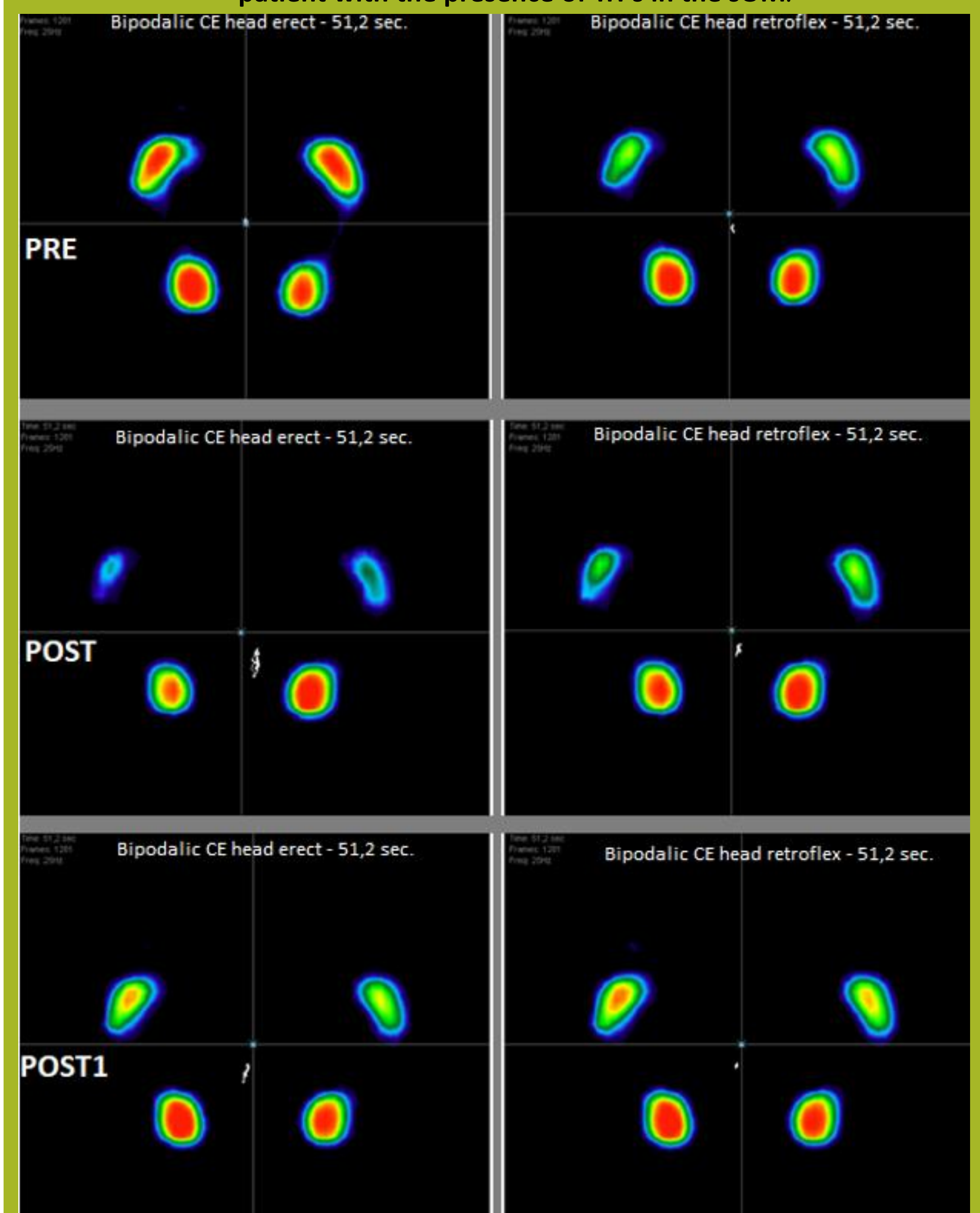
Evaluated parameters	Pre		Post		Pre vs. Post		Pre vs. Post1	
	Mean	SD	Mean	SD	Z	p	Z	p
<b>Upright stance</b>								
CoP trajectory length (mm)	450±127		607±168		-2.1	<b>0.02*</b>	-1.1	0.15
CoP ellipse area (mm <sup>2</sup> )	95±112		218±158		-1.9	<b>0.03*</b>	-0.8	0.21
Average CoP velocity (mm/s)	10±2		11±4		-1.8	<b>0.03*</b>	-0.9	0.19
CoP X mean (mm)	2±10		2±8		-0.2	0.42	-0.1	0.45
CoP Y mean (mm)	-14±10		-26±9		-1.7	<b>0.04*</b>	-1.5	0.07
CoP X SD (mm)	1.8±0.7		2.3±1		-2.3	<b>0.01*</b>	-1.9	0.03*
CoP Y SD (mm)	1.8±0.8		4.4±2		-1.7	<b>0.04*</b>	-1	0.15
<b>Head tilted stance</b>								
CoP trajectory length (mm)	490±142		518±131		-0.5	0.31	-1	0.17
CoP ellipse area (mm <sup>2</sup> )	103±64		131±111		-0.3	0.39	-1.1	0.13
Average CoP velocity (mm/s)	10±3		11±3		-0.1	0.44	-0.7	0.26
CoP X mean (mm)	1±7		2±6		-0.3	0.36	-1.2	0.11
CoP Y mean (mm)	-18±11		-17±13		-0.3	0.39	-0.1	0.45
CoP X SD (mm)	1.7±0.7		1.8±0.7		-0.1	0.44	-0.3	0.36
CoP Y SD (mm)	2.9±1.3		3.4±1.9		-0.4	0.36	-1.1	0.14

Legend: Pre - before treatment; Post - after treatment; Post1 - after one hour of treatment; Z - Z-score for Wilcoxon rank-sum test; P - probability value; \* - statistically significant value; CoP X mean - mean value of CoP movement in the anteroposterior direction; CoP Y mean - mean value of CoP movement in the mediolateral direction; CoP X SD - standard deviation of CoP movement in the anteroposterior direction; CoP Y SD - standard deviation of CoP movement in the mediolateral direction; CoP X SD - standard deviation of CoP movement in the anteroposterior direction.

**Table 2** Comparison of stabilometric parameters in the control group

Evaluated parameters	Pre		Post		Pre vs. Post		Pre vs. Post1	
	Mean	SD	Mean	SD	Z	p	Z	p
<b>Upright stance</b>								
CoP trajectory length (mm)	511±210		602±162		-1.9	<b>0.03*</b>	-1.2	0.12
CoP ellipse area (mm <sup>2</sup> )	83±79		92±61		-0.1	0.49	-0.1	0.48
Average CoP velocity (mm/s)	10±4		12±3		-1.4	0.08	-0.6	0.26
CoP X mean (mm)	1±8		3±6		-0.4	0.36	-1.2	0.10
CoP Y mean (mm)	-20±15		-22±13		-0.4	0.34	-0.2	0.42
CoP X SD (mm)	1.9±0.8		1.7±0.9		-0.7	0.24	-0.2	0.43
CoP Y SD (mm)	2±1.3		2.8±0.9		-0.9	0.18	-0.3	0.37
<b>Head tilted stance</b>								
CoP trajectory length (mm)	450±190		474±217		-2.1	<b>0.02*</b>	-1.8	<b>0.04*</b>
CoP ellipse area (mm <sup>2</sup> )	57±40		45±26		-0.5	0.30	-1.6	0.05
Average CoP velocity (mm/s)	10±3		10±2		-2.05	<b>0.02*</b>	-1.2	0.12
CoP X mean (mm)	3±6		3±5		-0.7	0.23	-0.2	0.41
CoP Y mean (mm)	-18±13		-20±13		-0.6	0.26	-0.7	0.25
CoP X SD (mm)	1.8±1		1.3±0.5		-0.5	0.29	-0.9	1.76
CoP Y SD (mm)	1.6±0.7		1.6±0.6		-0.8	0.22	-1.3	0.10

Example of CoP oscillations in the Cervical test, with eyes closed (CE) before therapy (PRE), just after therapy (POST) and 1 hour after therapy (POST1) in a patient with the presence of TrPs in the sOM.



## Conclusions

In our study on the influence of myofascial release technique on postural stability immediately after its application, we observed significant differences in posturographic parameters, indicating increased instability in patients compared to their pre-therapy state. These patients received myofascial treatment for trigger points in the suboccipital muscles. However, after an hour of rest, the patients' postural parameters were adjusted and normalized. The myofascial technique also had an impact on healthy individuals in the control group, particularly on the trajectory of the center of pressure (CoP). Overall, the influence of myofascial release on postural stability was much smaller in healthy individuals without trigger points in the suboccipital region. These results support the theory that therapeutic intervention in the upper cervical spine area affects proprioception from that area and postural stability. Therefore, for safety reasons, we recommend that such patients remain in a stable position after therapy, one that does not require significant postural stability. This is particularly important for patients scheduled to undergo additional kinesiotherapy after manual therapy, as it could affect both safety and the quality of exercise. These findings could contribute to improving the safety and quality of rehabilitation treatment for patients.