

Effects of Transcranial Direct Current Stimulation associated with Physiotherapy in women with Chronic Pelvic Pain: a case reports

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Aims of study

To evaluate the effect of transcranial direct current stimulation (tDCS) associated with physiotherapy for the pelvic floor in the short and medium term (3 months) on sexual function, kinesiophobia and quality of life in women with chronic pelvic pain (CPP).

Materials and methods

This study is based on case reports, longitudinal, interventional, quantitative study.

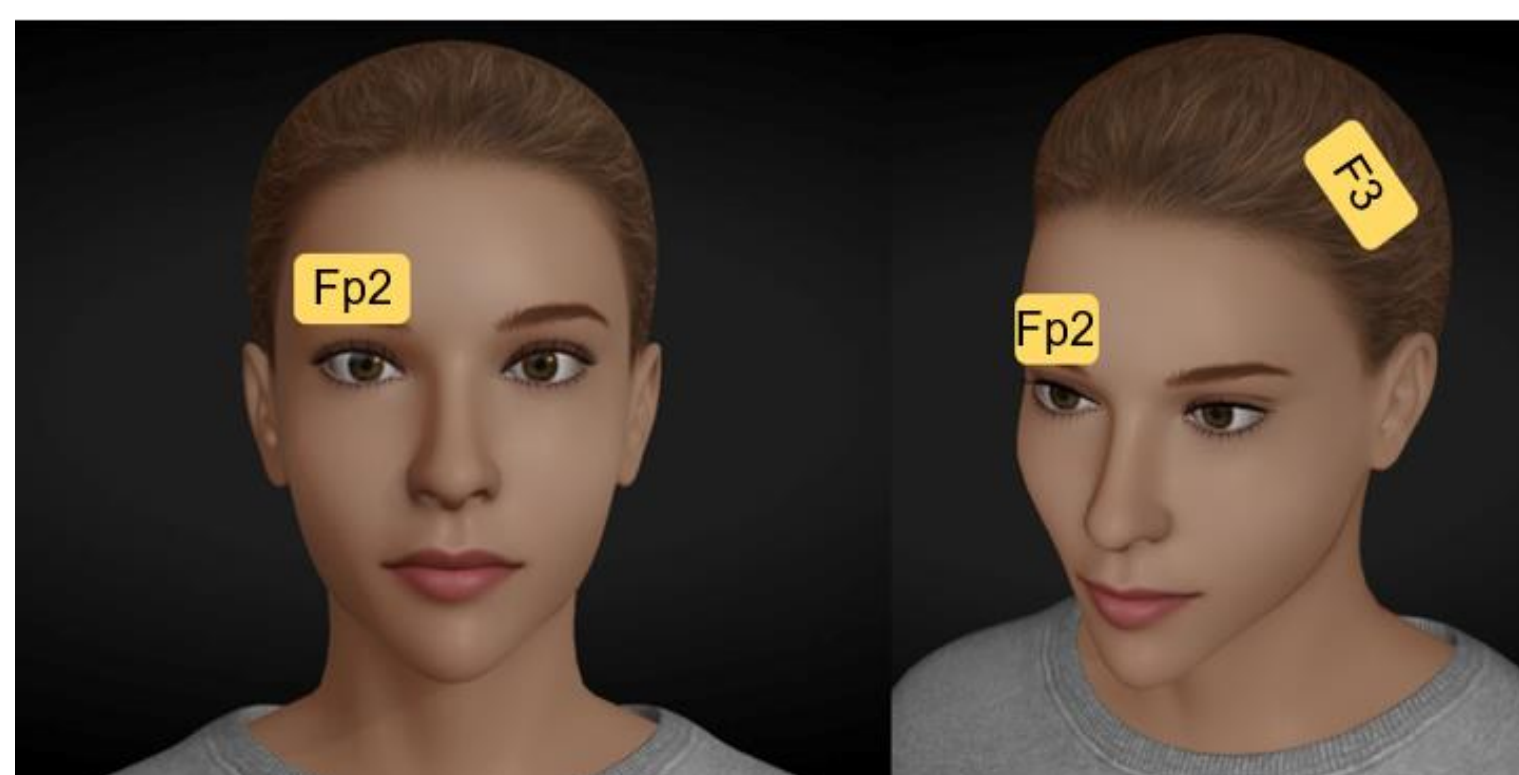
Women were recruited through advertising on social media from October 2023 to March 2024.

Women aged between 18 and 40 years old who complained of pelvic pain for more than 6 months and who agreed and signed the Free and Informed Consent Form. Pregnant women and women who did not comply with the complete intervention protocol were excluded from the study.

The application of tDCS (figure 1) was carried out for 5 consecutive days, for 20 minutes and simultaneously with perineal massage and pelvic floor muscle training (PFMT) with a focus on muscle relaxation.

The assessment instruments used were: Tampa scale for kinesiophobia (TSK), female sexual function index (FSFI), brief pain inventory (BPI) and world health organization quality of life brief version (WHOQOL-BREF).

Figure 1 – Position of the electrodes during tDCS.



Anodic electrode in the left dorsolateral prefrontal region (F3) and cathodic electrode in the right supraorbital region (Fp2).

The data was analyzed using the Statistical Package for Social Science (SPSS) version 2.3. The numerical variables were presented as means, standard deviations, percentages, and the statistical test used to evaluate the intervention was the Friedman test, considering a p value <0.05.

Results

Table 1 – Scores of pre- and post-treatment assessment instruments.

QUESTIONNAIRE	MEAN				SD				p VALUE		
	BEF tDCS	AFT tDCS	AFT 1 MTH	AFT 3 MTH	BEF tDCS	AFT tDCS	AFT 1 MTH	AFT 3 MTH	BEF/AFT	BEF/1 MTH	BEF/3 MTH
TSK	47.50	36.00	42.50	40.50	8.09	11.33	10.98	11.36	0,083	0,046*	0,046*
FSFI	24.30	27.25	22.75	27.60	7.82	3.58	10.22	11.48	0,564	0,564	1
DESIRE	3.00	3.90	3.30	4.50	1.34	0.88	1.12	1.09	1	1	0,564
AROUSAL	3.75	4.80	4.05	5.40	1.11	1.22	2.16	2.39	0,317	1	0,317
LUBRICATION	4.35	3.90	3.90	4.95	1.26	0.45	2.08	2.39	1	1	0,564
ORGASM	3.80	3.60	2.40	3.2	1.34	1.10	2.21	2.14	0,157	0,564	0,564
SATISFACTION	5.00	5.60	3.40	6.00	1.50	0.40	1.40	1.55	0,564	1	1
PAIN	4.00	5.20	4.80	2.80	1.73	0.91	2.45	2.19	1	1	0,317
BPI											
SEVERITY	7.75	2.50	5.00	4.62	2.00	1.42	2.22	2.88	0,046*	0,046*	0,046*
INTERFERENCE	9.00	1.35	6.21	4.07	3.11	1.54	2.35	3.46	0,046*	0,564	0,046*
WHOQOL-BREF	12.46	14.92	13.07	15.23	2.24	2.72	2.59	2.99	0,046*	0,317	0,083

SD (standard deviation); BEF (before); AFT (after); MTH (month); tDCS (Transcranial Direct-Current Stimulation); TSK (Tampa Scale for Kinesiophobia); FSFI (Female Sexual Function Index); BPI (Brief Pain Inventory); WHOQOL-BREF (World Health Organization Quality of Life Brief Version). *p<0.05

Of 7 women recruited, 4 completed the protocol and were included in the study.

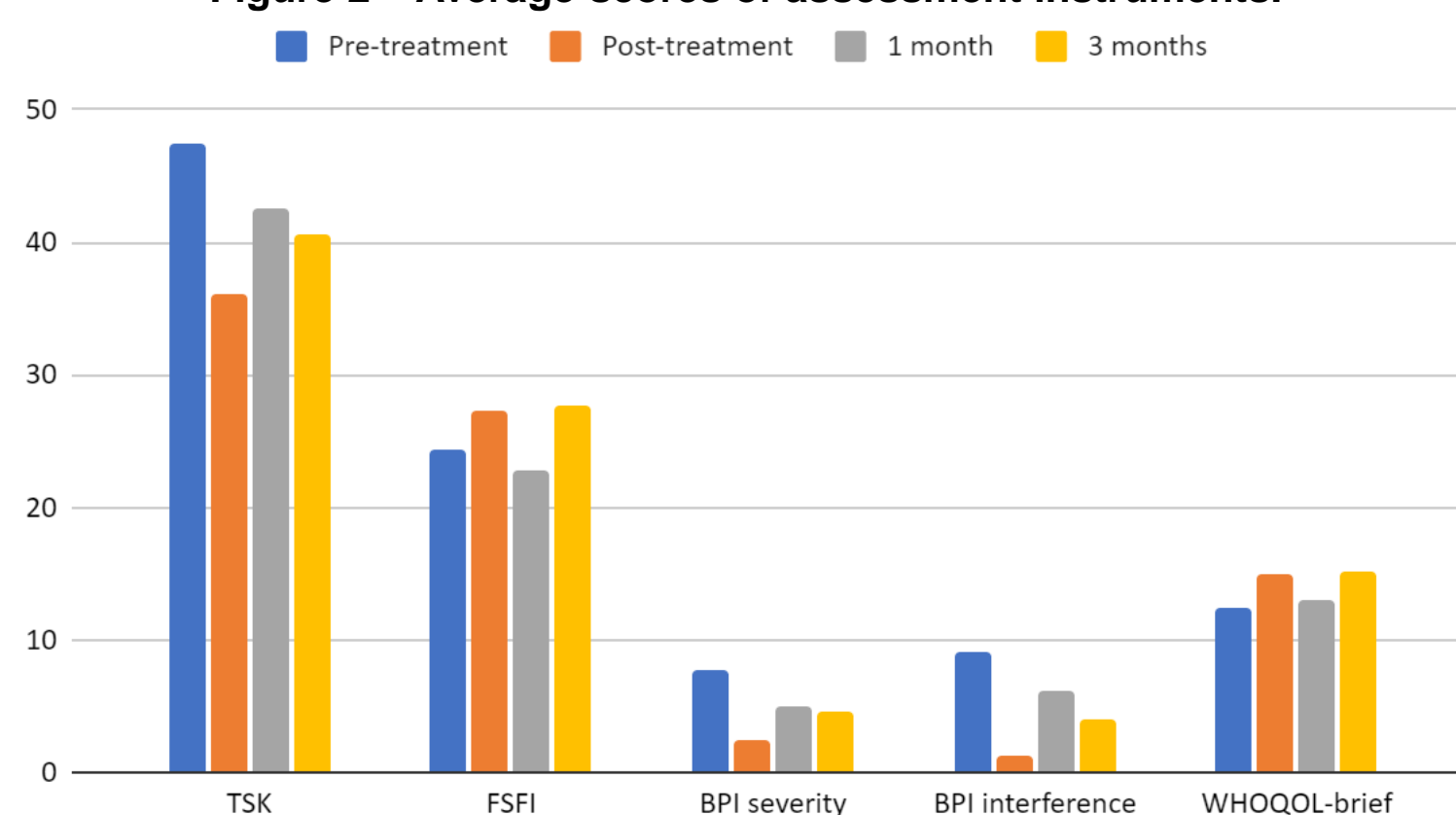
After the protocol, we obtained positive results for kinesiophobia, pain and quality of life. Kinesiophobia reduced significantly after 1 and 3 months.

There was an improvement in pain intensity and interference after 3 months.

Quality of life showed a significant improvement immediately after the end of the protocol but was not maintained after 3 months.

Regarding sexual function, it was noted that there was a higher average total score at the end of the protocol and 3 months after tDCS, when compared to pre-intervention, but it was not considered statistically significant.

Figure 2 – Average scores of assessment instruments.



TSK (Tampa Scale for Kinesiophobia); FSFI (Female Sexual Function Index); BPI (Brief Pain Inventory); WHOQOL-BREF (World Health Organization Quality of Life Brief Version).

Interpretation

tDCS has been shown to be beneficial in the management of chronic pain, since the stimulated brain region is associated with emotional processing and pain perception, playing an essential role in several cognitive processes¹. It is important to highlight that concerns about movement and repeat injuries are linked to chronic pain and disability².

Approximately 50% of women with pelvic floor dysfunctions have increased PFM tone. This condition may be related to CPP. Therefore, an approach that includes perineal massage, kinesiotherapy, relaxation and proprioception has been proposed, with the aim of promoting PFM relaxation and pain control, as recommended in the literature for the management of CPP³.

It was not possible to observe a significant improvement in the FSFI domains after the intervention, which can be explained by the heterogeneity and low number of participants in our sample. A single case study found in the literature, which also performed physiotherapy combined with tDCS, obtained similar results, showing no improvement in sexual function after treatment, but with a significant improvement in pain intensity⁴.

Conclusions

tDCS associated with pelvic floor physiotherapy was positive in reducing kinesiophobia, pain intensity and interference, which remained for up to 3 months after the intervention. Quality of life showed significant improvement immediately after treatment but was not maintained after 1 and 3 months. Sexual function did not show significant gains. It is suggested that randomized clinical trials with larger samples be carried out in order to demonstrate the effect of tDCS on CPP.

References

- PINTO CB, COSTA BT, DUARTE D, FREGNI F. Transcranial Direct Current Stimulation as a Therapeutic Tool for Chronic Pain. J ECT. 2018;34(3):e36-e50.
- SILVA NS da, ABREU SSE de, SUASSUNA PD. Kinesiophobia and associated factors in elderly females with chronic musculoskeletal pain: pilot study. Rev dor. 2016Jul;17(3):188-91.
- BARACHO E. Fisioterapia Aplicada à Saúde da Mulher. 6th. ed. Rio de Janeiro: Grupo GEN; 2018.
- GADELHA BCCV, MACIEL BGM, SALATA MC, LIMA MSN, OLHER RR, RIBEIRO TG. Transcranial Direct Current Stimulation combined with Physiotherapy in the control of Chronic Pelvic Pain: a case report. Brain Imaging and Stimul. 2023;2:e5322.