

# Transcranial direct current stimulation improves myofascial pain syndrome and chronic fatigue

R.G. Misse, A.M. dos Santos, J.M. de Souza, S.K. Shinjo

Division of Rheumatology, Faculdade de Medicina FMUSP, Universidade de Sao Paulo, Sao Paulo, SP, Brazil

Dear Editor,  
Myofascial pain syndrome (MPS) is usually accompanied by fatigue, mood alterations, and impaired quality of life (1). MPS treatments include pharmacological regimens (e.g., analgesics, muscle relaxants) and non-pharmacological schemes (e.g., exercise training, physiotherapy, acupuncture). Most of these strategies can also be applied to the treatment of fatigue. In addition, transcranial direct current stimulation (tDCS) has been used with good outcomes in individuals with MPS (1, 2) or fatigue (3, 4). The tDCS is safe with no serious adverse effects, and can reserve the central pain pathway by modulating cortical plasticity (2-4). To the best of our knowledge, no studies have assessed the effects of tDCS in patients with both refractory MPS and chronic fatigue.

In this context, we assessed a 33-year-old non-sedentary female patient with refractory MPS and fatigue, which had lasted for two years. She had received several therapies, such as gabapentin, amitriptyline, acupuncture, and Pilates exercises, which consists of low-impact flexibility and muscle strength exercises, and improve the overall body coordination. At admission to our service, she had a trigger point in her right quadratus lumborum, which radiated pain throughout the gluteus medius. Moreover, she had a trigger point in her left sternocleidomastoid, trapezius, levator scapulae, and posterior cervical muscles, which caused radiating pain throughout to

her entire left arm and shoulder. These trigger points were defined as sensitive spots and were located in a taut band of skeletal muscles. They caused local pain and referred muscle pain.

After signing the informed consent, the patient underwent five consecutive tDCS sessions with 2mA for 20 minutes. The positively-charged electrode was positioned at C3 (contralateral to the dominant limb), while the negatively-charged electrode was placed in the supraorbital region FP2. During the tDCS sessions, the patient performed also some physical exercise, which included a 5-minute treadmill warm-up followed by lower intensity (5) strength exercises: bench press, bench-squat, cable seated row, and leg press at 45° (three sets of 10-12 repetitions with breaks between 45 and 60 seconds).

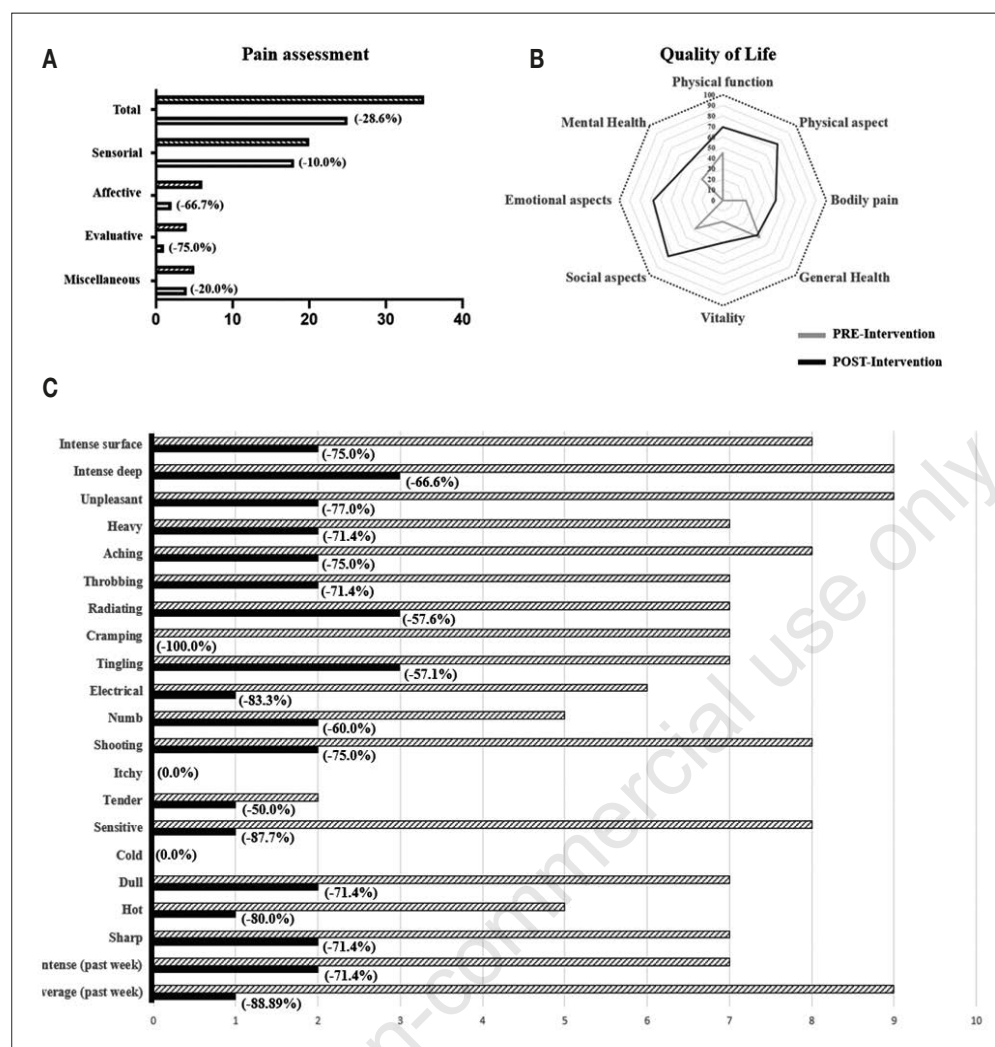
At baseline (PRE) and after five days (POST), the patient completed the following questionnaires: Pain Quality Assessment Scale (PQAS) (6), McGill pain inventory (7), Fatigue Severity Scale (FSS) (8), and Short Form-36 (9). The data were expressed as percentages (%) of change: (the difference between post and pre-values)/pre-value.

Compared to the PRE phase, myofascial pain decreased in the POST phase, as shown through the PQAS and McGill pain inventory questionnaires (Figure 1A and 1B). Moreover, notable improvements were observed in all the domains of quality of life (Figure 1C). In addition, there was a

Corresponding author:

Samuel Katsuyuki Shinjo

Division of Rheumatology, Faculdade de Medicina FMUSP, Universidade de Sao Paulo, Avenida Dr. Arnaldo, 455 - 3° andar, sala 3150, Cerqueira Cesar, CEP 01246-903, SP, Brazil  
E-mail: samuel.shinjo@usp.br



**Figure 1** - Data related to McGill pain assessment (A), health quality of life (B), and (C) general pain quality assessment. The data were expressed as percentages (%) of change: (the difference between post and pre-values)/pre-value.

mild reduction in the FSS parameters: 6.1 vs. 5.7 (-6.6%). There was no adverse effect related to tDCS and exercise training, and the patient participated in all phases of the protocol.

According to the literature, our patient had a good outcome with tDCS associated with exercise training: pain and fatigue decreased and quality of life also improved. These results can be related to the impact on the maladaptive efferent feedback mechanism present in pain, which leads to consequent reduction of fatigue (4).

These results are promising, but further

studies with a larger sample size are necessary to confirm our findings.

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#### Conflict of interest

All authors declare no conflict of interest.

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