

# Effect of a Bioenergy Economy Program on the Severity of Symptoms and Quality of Life of Patients With Myofascial Pain Syndrome

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**Abstract-** The aim of this study was to investigate the effect of a bioenergy economy-based program on the intensity of symptoms and quality of life among patients with myofascial pain syndrome. To collect the data, a simple random sampling was used among the women patients with MPS referred from a neurological clinic in Mashhad. Fifteen patients were collected as an experimental group. The method consisted of a quasi-experimental method with a pre-test, post-test, and follow-ups in two and six months after the program. Data collection main materials included the McGill Pain Questionnaire (MPQ) and WHO Quality of Life -BREF Questionnaire (WHOQOL-BREF). Moreover, Beck Depression Inventory-II (BDI-II) and the Beck Anxiety Inventory were used to increase the quality of the research. The group underwent six sessions of bioenergy economy-based program. Data collected were analyzed using repeated-measures analysis of variance (ANOVA) to reach the aim of the study. The mean score of pain intensity and depression had a significant difference in the post-test and the two follow-ups with the pre-test. The mean score of the anxiety had a significant difference in the pre-test and post-test but not in the follow-ups. The mean score of quality of life did not have a significant difference in the pre-test, post-test, and follow-ups even in the sub-scales, but the mean score of the post-test and the follow-ups were higher than the pre-test. Bioenergy economy-based program caused a significant decrease in the pain intensity, depression, and anxiety in women patients with MPS and remained consistent in the two and six month's follow-ups. Even in the quality of life, there was an improvement after the program, and although the fluctuation in the score, the mean score after six months was lower than before the program. To conclude, a bioenergy economy-based program can be an effective program in lowering the pain, depression, and anxiety and improving the quality of life in women patients with myofascial pain syndrome, and this remains consistent in the following six months.

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## Introduction

Bioenergy economy is a phenomenal-contextual, evolutionary, and meta-diagnostic method. It is meta-diagnostic as it does not explore the content of thought and pathologies of the body and psyche. It is a phenomenological and contextual method in the sense that it focuses on the context of the phenomenal field and developing the sense of security and coherence of

the body. Consequently, BEE does not deal with the content of thought, pathogenesis, and treatment but with modes of the body, salutogenesis, and care (1).

The BEE model, by focusing on different layers, can cause body sensations and affect mood disorders (2,3).

Some studies have reported its positive effects on pain reduction (4), although it seems that its routine application for pain management is not practiced yet.

Myofascial pain syndrome is a muscular disease-

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causing local and referral pains. This syndrome can manifest as a primary disorder causing local or regional pain, or it may be secondary to some other disorders, including psychosomatic reasons (5). Studies have shown that this syndrome is a leading cause of acute or chronic neuromuscular pain diagnosed in the first level of treatment, bringing patients to pain centers (6). Many patients suffering from this syndrome do not respond to treatment because of depression and anxiety. Therefore, mood disorders should be diagnosed and managed in these patients. This study was conducted to determine the effect of a bioenergy economy program on reducing the pain and improving the quality of life, depression, and anxiety of the patients with myofascial pain syndrome.

## Materials and Methods

This study was a double-blind clinical trial. Convenience sampling was used to select subjects from female patients with myofascial pain syndrome that were referred from a neurology clinic. The reason for selecting female patients was cultural limitations and higher motivation of patients. Myofascial pain syndrome was diagnosed by a neurologist using clinical manifestations, physical examination, and some neurological tests like EMG, MRI, CT scan, and X-ray to rule out other neurological disorders. Thirty patients were selected and assigned to two groups, each including 15 patients.

Our inclusion criteria were female sex (due to the cultural problems, age at least 15 years, disease duration of at least six months, and at least one neurologist visit for diagnosis. Patients with other neurological and psychiatric disorders confirmed by the neurologist or psychiatrist were not included in the study. The exclusion criteria were not attending the intervention sessions regularly or using other complementary treatment modalities during the sessions. Moreover, if the patients were not willing to continue the intervention, they were excluded from the research.

The two main tools used in this research were the McGill Pain Questionnaire (MPQ) and the WHO Quality of Life -BREF Questionnaire (WHOQOL-BREF) for the assessment of pain and quality of life before and after the bioenergy economy-based intervention and during the follow-ups. Moreover, the Beck Anxiety Inventory and the Beck Depression Inventory (BDI) was used to improve the quality of the research.

The patients with MPS underwent a brief interview

and pre-test, including these four questionnaires. Then, after explaining the purpose of this study and obtaining written consent, six sessions of a bioenergy economy-based program were performed in a psychosomatic clinic.

The training sessions were held once a week. During this clinical training session of 170 minutes, the patients learned to consciously release their tension in the muscular, cognitive, and energy levels and consciously guide their will and body awareness. The participants were instructed to perform exercises they learned in weekly sessions every day. During the bioenergy economy-based program, the experimental group received a bioenergy economy with a "biofield attunement." The therapeutic and training principles of the bioenergy economy intervention were within the framework of the "bioenergy economy" package based on operational and educational protocols of the Energy Medicine University, California, United States (Energy Medicine University, 2012) established by Goli<sup>7</sup>. The sessions were as follows:

### First session

Introducing the goal of the program/Muscle Economy/Stress and Relaxation Response/Cycle of thought, emotion, body/Importance of body in emotion regulation, cognition, and relationships

### Techniques

Vibrational exercises (first part) with emphasis on the awareness of the bioenergy flow in the body, grounding, or tensegrity.

### Second session

Body awareness based on the bioenergy economy/Tense-release activation to active salutogenesis and self-organizing the system/Trusting the organism and body awareness for preventing reaction and releasing tension.

### Techniques

Vibrational exercise (second part), tensegrity or grounding, body awareness meditation.

### Third session

Body memory/Energy blockers and non-economic cathexis, familiarity with energy pathways/Integrity in the fluidity of consciousness on timely or untimely cathexis/Energy cycles, familiarity with attunement.

### Techniques

Body awareness consisting of vibrational exercises

(brief form)/biofield attunement, grounding, and hands-on energy emission technique.

**Fourth session**

Conscious attention conduction/Inward and outward attention conduction/Economic attention/Importance of gratitude exercises.

**Techniques**

The detachment of attention/ Gratitude practice/Body awareness exercise (brief from).

**Fifth session**

Familiarity with narrating/Importance of body integrity and safety in narration/Grudge and blame in the narrative of non-life/ Hell machine/Importance of forgiveness/ Self-caring in life.

**Techniques**

Body awareness (brief from)/Biofield attunement 2/Forgiveness practice

**Sixth session**

Review of key points during the last six weeks/Setting a daily schedule/ Finding clues in body, attention, and thought that represent non-economic orientation/Using key points for these clues to make a better life.

**Techniques**

Review of body awareness, attunement and narrating  
For each session, a flashcard, including a summary of the session and the audio recordings of the daily exercise, was given to the participants. They were asked to practice every day during the week, and feedback was taken in the next session. After the sixth session, the patients in the case group underwent a post-test, which was the same as the pre-test. Follow-up assessments were done two and six months after the intervention in order to investigate the effect of the time interval on them.

The SPSS software was used for data analysis. The results are reported as mean and standard deviation. Repeated measures ANOVA was used to investigate the effect of intervention considering groups as between subjects.

**Results**

According to the demographic data of 15 patients in the case group, three were 15-30 years, three were 30-40

years, eight were 40-50 years, and one was above 50 years. Of 13 patients in the control group, four were 15-30 years, four were 30-40 years, two were 40-50 years, and three were above 50 years. Three and 12 patients in the case group and 1 and 12 patients in the control group were single and married, respectively. In the case group, 1 had primary education, 1 had junior high school education, 2 had high school diplomas, 3 had associate's degrees, 5 had bachelor's degrees, and 3 had master's degrees. In the control group, 4 had primary education, 5 had high school diplomas, 1 had an associate's degree, and 3 had bachelor's degrees. As for the employment status, 6 patients were employees, 1 was a housewife, 1 was self-employed, and 2 were unemployed in the case group, and 1 was an employee, 9 were housewives, 2 were self-employed, and 1 was unemployed in the control group. Table 1 shows the mean and standard deviation of study variables in case and control groups at different assessment times.

Repeated measures ANOVA was used to compare the mean scores of the study variables at different assessment times. Table 2 presents the results of Mauchly's test of sphericity for study variables. The results of the Mauchly's test of sphericity were significant for pain and QOL, indicating variance non-homogeneity at different times. Therefore, the Greenhouse-Geisser test was applied for adjusting the degree of freedom to compare the mean scores of pain and QOL.

Table 3 shows the mean scores of pain, anxiety, depression, and QOL in both groups at different assessment times. According to Table 3, the results of the test of between-subject were not significant for pain, QOL, anxiety, and depression, indicating that there was no significant difference between the two groups regardless of the assessment times ( $P>0.05$  for all variables). Moreover, according to Table 3, the results of the test of within-subject were significant for all variables, indicating that regardless of intervention (Group effect), the mean scores of the study variables including anxiety, depression, pain, and QOL changed significantly during the measurement times ( $P<0.05$  for all variables). However, the most important part of Table 3 is the results of the interaction test. No significant difference was observed in pain and QOL according to the results of measurement time-intervention interaction ( $P=0.139$  for pain and  $0.651$  for QOL). However, the results of measurement time-intervention interaction showed significant differences in the mean scores of anxiety and depression between case and control groups at different measurement times

( $P < 0.001$  for anxiety and  $P = 0.026$  for depression). In other words, the mean scores of anxiety and depression were significantly different between case and control groups at different measurement times, indicating the effect of the intervention. Table 3 reveals a decrease in

the mean scores of depression and anxiety in both groups over time. Figure 1 presents the mean scores of four variables in both groups at different measurement times.

**Table 1. The mean and standard deviation (SD) of pain, quality of life, Anxiety, Depression in this study pre and post-intervention**

|                 |         | Intervention |       | Control |       |
|-----------------|---------|--------------|-------|---------|-------|
|                 |         | Mean         | SD    | Mean    | SD    |
| Pain            | Pre     | 34.00        | 12.19 | 24.92   | 15.28 |
|                 | Post    | 17.07        | 13.97 | 17.15   | 14.42 |
|                 | Follow1 | 15.73        | 16.71 | 17.85   | 15.69 |
|                 | Follow2 | 17.80        | 16.15 | 12.15   | 14.57 |
| Quality of life | Pre     | 85.40        | 15.61 | 82.08   | 12.96 |
|                 | Post    | 92.73        | 15.09 | 86.15   | 12.34 |
|                 | Follow1 | 88.47        | 14.05 | 83.23   | 15.27 |
|                 | Follow2 | 91.80        | 12.32 | 89.77   | 12.51 |
| Anxiety         | Pre     | 23.93        | 10.98 | 18.00   | 8.97  |
|                 | Post    | 13.87        | 11.05 | 15.23   | 7.90  |
|                 | Follow1 | 15.00        | 11.61 | 16.77   | 9.71  |
|                 | Follow2 | 15.40        | 11.64 | 8.54    | 8.66  |
| Depression      | Pre     | 19.33        | 9.57  | 15.92   | 9.16  |
|                 | Post    | 9.87         | 8.02  | 12.08   | 7.32  |
|                 | Follow1 | 10.93        | 8.45  | 13.92   | 9.46  |
|                 | Follow2 | 9.67         | 8.92  | 4.77    | 5.02  |

**Table 2. Results of Mauchly's test of sphericity to evaluate variance homogeneity of study parameters at different measurement times**

| Variable | Mauchly's W | Chi-Square | Degree of freedom | P     |
|----------|-------------|------------|-------------------|-------|
| Pain     | 0.469       | 18.732     | 5                 | 0.002 |
| QOL      | 0.573       | 13.771     | 5                 | 0.017 |
| Anxiety  | 0.657       | 10.372     | 5                 | 0.066 |
| Depress  | 0.701       | 8.769      | 5                 | 0.119 |

**Table 3. Results of repeated measures ANOVA for assessment of mean scores of pain, anxiety, depression, and quality of life at different assessment times in each study group**

| Outcome | Group               | Between-subject    | Within-subject           | Interaction Intervention*Time |
|---------|---------------------|--------------------|--------------------------|-------------------------------|
| Pain    | Intervention (N=15) | F=.440<br>df=1;26  | F=13.63<br>df=2.04;53.15 | F=2.04<br>df=2.04;53.15       |
|         | Control (N=13)      | P=0.513            | P<0.001                  | P=0.139                       |
| QOL     | Intervention (N=15) | F=0.882<br>df=1;26 | F=4.67<br>df=2.13;55.42  | F=0.453<br>df=2.12;55.42      |
|         | Control (N=13)      | P=0.356            | P=0.012                  | P=0.651                       |
| Anxiety | Intervention (N=15) | F=0.541<br>df=1;26 | F=9.98<br>df=3;78        | F=3.71<br>df=2.13;55.42       |
|         | Control (N=13)      | P=0.469            | P<0.001                  | P<0.001                       |
| Depress | Intervention (N=15) | F=85.67<br>df=1;26 | F=16.83<br>df=3;78       | F=3.54<br>df=3;78             |
|         | Control (N=13)      | P=0.768            | P<0.001                  | P=0.026                       |

The mean  $\pm$  SD studied variables were presented in four-time points

#For pain and QOL variables, between, within and interaction analyses were done using Greenhouse-Geisser test

\*Significance level was considered as 0.05

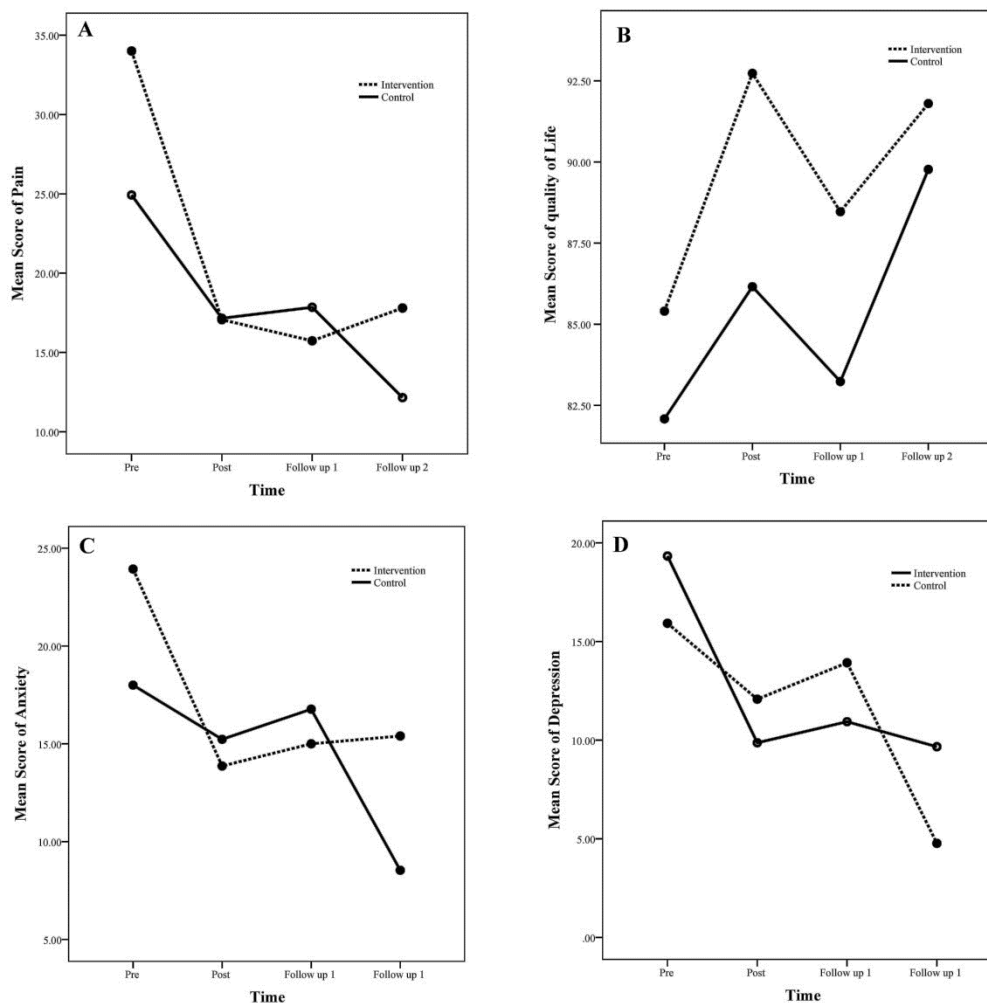


Figure 1. The mean scores of pain (A), QOL (B), anxiety (C), and depression (C) at different assessment times in case and control groups

## Discussion

This is one of the few studies of the effect of a bioenergy economy-based program on the pain, QOL, depression, and anxiety of patients suffering from myofascial pain syndrome. The results showed a significant decrease in depression and anxiety after the intervention.

The chronic nature of this disease causes psychological manifestations in these patients; therefore, it seems that decreased depression and anxiety may reduce as well. According to the results, pain also decreased in line with depression and anxiety.

Several studies found that many patients with myofascial pain syndrome do not respond to treatment because they are anxious and depressed. Therefore, mood disorders should be also identified and treated in these patients. Hence, it seems that the bioenergy

economy as a meta-cognitive and holistic method can be helpful in the management of these patients. In one study, the effect of a bioenergy economy program on attention bias modification in patients with high anxiety sensitivity (8). The results showed that this protocol was effective in improving attention bias and decreasing anxiety sensitivity (9). Derakhshan *et al.*, (4) studied the effect of a bioenergy economy program on pain control, depression, and anxiety in patients with migraine headaches and found that this intervention had a positive effect on these parameters that continued for up to two months after the intervention.

According to the gate control theory of pain and the neuromatrix theory, pain is not a linear sensory transmission system but a dynamic and active process that involves continuous interactions among complex ascending and descending systems (9). Moreover, it is mostly a multidimensional experience produced by

multiple influences (10). Therefore, the bioenergy economy as a multidimensional approach may be effective in pain reduction, which was confirmed in our study. Bioenergy economy modalities such as cognitive, behavioral, mindful, and bioenergetic interventions can modify attention bias through the conscious leading of attention. Moreover, in addition to integrating attention, they can reduce body sensations attention bias and improve anxiety sensitivity. Since similar modalities were used in our study and the mean score of anxiety reduced in patients, we believe that the effect of BEE may be exerted through modulation of attention bias, which can improve self-efficacy and self-esteem. Several studies found an interaction between self-efficacy and attention bias (1,11). Moreover, many studies reported that the Modification of attention bias and acceptance has positive effects on one another (12,13,14).

Besides, a large body of evidence suggests the effectiveness of bioenergy economy therapeutic elements, such as relaxation (15,16), wholeness (8), mindfulness (17), and coherence (18) on the improvement of self-efficacy and acceptance .

Modulation of attention bias and improvement of self-efficacy and acceptance can all decrease the level of distress in individuals, which can reduce pain, especially chronic pain.

Pain is a strong stressor that may lead to severe distress (19,20). Distress reduction can affect muscle spasm directly (20) or through decreasing anxiety (22). Spasm reduction can also lower anxiety and distress (23,24). All the effects can lower pain. When the pain subsides, muscle spasm and anxiety are reduced, resulting in an overall improvement in MPS patients.

Bioenergy-based treatments may have deep psychological impacts (25) and consequently lead to immunologic results. Moreover, practical experiences of the bioenergy flow and its transfer from the therapist can cause immunological modulation resulting in healing similar to inductive and hypnotic effects. The direct effect of the induced energy on cells, especially in the central nervous system, can improve the mood and decrease anxiety. These changes in the psychological system based on the aforementioned mechanisms can treat physical diseases (7). Immune system modulation can affect inflammation and reduce pain intensity (26-28), which was confirmed in this study as well. In addition, several studies found that bioenergy economy interventions could be effective in depression and anxiety, too (4,7). MPS may cause depression and anxiety due to its chronic nature and may also result

from depression and anxiety; therefore, as shown in the results of this study, a BEE program may improve this disease.

BEE is defined in the field of “care” that is more effective for MPS patients due to the chronic nature of their disease and “acceptance” itself can result in reframing, refocusing, and remodeling, and a new interpretation of life (1), which can also reduce pain in these patients.

The increased QOL in this study confirmed the positive effects of depression and anxiety improvement. Wiger *et al.*, (11) included 200 patients with chronic myofascial pain and fibromyalgia in a 4-week rehabilitation program. The results showed decreased pain intensity and marked QOL improvement, and the majority of the patients returned to work after about one year (11).

Finally, the results of this study suggest that in disorders like MPS, which can be primary or secondary with an unknown etiology in some cases, mind-body interventions as a holistic approach may be useful. Considering the chronic nature of this disease, depression, and anxiety play important roles in the worsening of pain in these patients and therefore holistic methods like BEE that are based on cognitive, behavioral, mindful, body-centered interventions can improve the patients’ conditions and enhance their adaptation to the surrounding environment. BEE can reduce the pain intensity, depression, and anxiety and improve the quality of life of the patients and can be widely used as a complementary treatment along with other therapies considering its simplicity and cost-effectiveness to promote the patients’ health.

## References

1. Goli F. Bioenergy Economy: A Biosemiotic Model of Care. *Int J Body Mind Cult* 2016;3:1-7.
2. Feinstein D. Energy psychology: A review of the preliminary evidence. *Psychotherapy* 2008;45:199-213.
3. Gallo FP. Energy diagnostic and treatment methods: New York, United States, WW Norton & Company; 2000.
4. Derakhshan A, Manshaei G, Afshar H, Goli F. Effect of a bioenergy economy program on pain control, depression, and anxiety in patients with migraine headache. *Int J Body Mind Cult* 2016;3:30-45.
5. Kellner R. Psychosomatic syndromes and somatic symptoms: United States, American Psychiatric Pub; 1991.
6. Simons DG. Myofascial pain syndromes: where are we? Where are we going? *Arch Phys Med Rehabil*

- 1988;69:207-12.
7. Goli F. Bioenergy economy: a methodological study on bioenergy-based therapies: Xlibris Corporation; 2010.
  8. Goli F. Bioenergy Economy: Fields and Levels—A Narrative Review. *Int J Body Mind Cult* 2018;5:171-82.
  9. Melzack R, Katz J. Pain. *Wiley Interdiscip Rev Cogn Sci* 2013;4:1-15.
  10. Melzack R, Wall PD. Pain mechanisms: a new theory. *Science* 1965;150:971-9.
  11. Wigers SH, Finset A. [Rehabilitation of chronic myofascial pain disorders]. *Tidsskr Nor Laegeforen* 2007;127:604-8.
  12. Barry TJ, Vervliet B, Hermans D. An integrative review of attention biases and their contribution to treatment for anxiety disorders. *Front Psychol* 2015;6:968.
  13. Dewall CN, Maner JK, Rouby DA. Social exclusion and early-stage interpersonal perception: selective attention to signs of acceptance. *J Pers Soc Psychol* 2009;96:729-41.
  14. Garland EL, Howard MO. Mindfulness-oriented recovery enhancement reduces pain attentional bias in chronic pain patients. *Psychother Psychosom* 2013;82:311-8.
  15. Madadkar S, Basiri M. Effect of Relaxation Jacobson on quality of Life and self-efficacy in Patients Undergoing Hemodialysis. *Complement Med J faculty of Nurs Midwifery* 2018;7:2090-9.
  16. Masoudi R, Soleimany MA, Moghadasi J, Qorbani M, Mehralian HA, Bahrami N. Effect of progressive muscle relaxation program on self-efficacy and quality of life in caregivers of patients with multiple sclerosis. *JQUMS* 2011;15:41-7.
  17. Charoensukmongkol P. Benefits of mindfulness meditation on emotional intelligence, general self-efficacy, and perceived stress: evidence from Thailand. *J Spiritual Ment Health* 2014;16:171-92.
  18. Posadzki P, Glass N. Self-efficacy and the sense of coherence: narrative review and a conceptual synthesis. *ScientificWorldJournal* 2009;9:924-33.
  19. Pain IoLARCo, Animals DiL. Recognition and alleviation of pain and distress in laboratory animals: United States, National Academy Press; 1992.
  20. Seyedmehdi SM, Dehghan F, Ghaffari M, Attarchi M, Khansari B, Heidari B, et al. Effect of general health status on chronicity of low back pain in industrial workers. *Acta Med Iran* 2016;54:211-7
  21. Stratemeier N, Kohli D, Rastogi P. Curious case of muscle spasm. *Clin Case Rep* 2014;2:79-81.
  22. Bandelow B, Michaelis S, Wedekind D. Treatment of anxiety disorders. *Dialogues Clin Neurosci* 2017;19:93-107.
  23. Melo-Dias C, Apóstolo JLA, Cardoso DFB. Effectiveness of progressive muscle relaxation training for adults diagnosed with schizophrenia: a systematic review protocol. *JBIDatabase System Rev Implement Rep* 2014;12:85-97.
  24. Ramasamy S, Panneerselvam S, Govindharaj P, Kumar A, Nayak R. Progressive muscle relaxation technique on anxiety and depression among persons affected by leprosy. *J Exerc Rehabil* 2018;14:375-81.
  25. Karademias EC, Kafetsios K, Sideridis GD. Optimism, self-efficacy and information processing of threat-and well-being-related stimuli. *Stress and Health: Journal of the International Society for the Investigation of Stress* 2007;23:285-94.
  26. Chang VY, Palesh O, Caldwell R, Glasgow N, Abramson M, Luskin F, et al. The effects of a mindfulness-based stress reduction program on stress, mindfulness self-efficacy, and positive states of mind. *Stress and Health: Journal of the International Society for the Investigation of Stress* 2004;20:141-7.
  27. Law LAF, Sluka KA, McMullen T, Lee J, Arendt-Nielsen L, Graven-Nielsen T. Acidic buffer induced muscle pain evokes referred pain and mechanical hyperalgesia in humans. *Pain* 2008;140:254-64.
  28. Punchedard NA, Whelan CJ, Adcock I. *The Journal of Inflammation*. *J Inflamm (Lond)* 2004;1:1.

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