

ANALYSIS OF THE ACUTE EFFECT OF ACUPRESSION AND CUPPING THERAPY TECHNIQUES APPLIED TO TRIGGER POINTS IN THE CERVICAL REGION OF UNIVERSITY STUDENTS

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Abstract: Cervical pain is a current problem with several associated factors, which predispose the appearance of trigger points. The myofascial trigger point is defined as a tactile nodule located in a tension band in the muscle, which produces a pain pattern recognized by the patient spontaneously, under pressure from the therapist's fingers or use of a specific device. The diagnosis of the trigger point is clinical in nature, with the possibility of quantifying the pain condition. Thus, the objective of this study was to evaluate the effectiveness of acupressure and cupping therapy techniques in reducing the pain threshold in trigger points, in the cervical region of university students and to compare the techniques. For the development, 14 university students were selected at the Teaching Clinic of the UNIFAFIBE University Center, who were randomly divided into Acupressure Group and Cupping Therapy Group. Participants underwent an evaluation process using the visual analogue scale, Neck Pain, SF-12 and pressure algometry. After the pre-experimental evaluations, the participants received the applications of acupressure and cupping therapy techniques, which were performed in a single session. At the end of the intervention, the evaluation procedures were performed again in order to compare the scenario before and after application of the techniques. In view of the results, it was possible to observe the reduction of pain with the application of acupressure or cupping therapy. When comparing which technique produces better results, it was observed that there were no significant differences. In view of the above, it is suggested that the application of these techniques improves the pain in a single session.

Keywords: Cervical Pain, Acupressure, Cupping Therapy, Trigger Points.

INTRODUCTION

Neck pain is a problem present in the current scenario and has several associated causes (SOARES et al., 2012). The symptoms caused by musculoskeletal disorders of the cervical spine negatively influence the quality of life of university students, as this population goes through moments of tension generated by the academic routine (MACEDO, 2017). Among the factors that predispose to the appearance of musculoskeletal disorders in the cervical region, incorrect daily posture and emotional stress are the main factors to be cited for the formation of tension nodules (ROZA, 2007; MACEDO, 2017).

Tension nodules also known as myofascial trigger point (PGM) is defined as a tactile nodule located in a tension band in the muscle, which produces a reference pain pattern recognized by the patient spontaneously or under pressure from the fingers. For the formation of these musculoskeletal disorders, there are several theories, such as trauma, ischemia, inflammation, functional overload, endocrine disorders, nutritional deficiencies and chronic infections and emotional stress (SANTOS, 2012). The prevalence of myofascial pain varies in the population, since the upper trapezius, scalene, sternocleidomastoid and levator scapula muscles are the most affected in the shoulder girdle and cervical region (CULPI; MARTINELL, 2018).

Trigger point diagnosis is clinical in nature. To determine the clinical features and start treatment, it is extremely important to perform a thorough anamnesis and a good physical assessment (MORI; MEJIA, 2014). In this sense, the assessment of pain and its interference in the quality of life must be performed correctly, in order to minimize the symptoms caused by PGM (REIS et al., 2010). Therefore, visual scales and questionnaires can be used as quick and simple assessment methods. This way, the visual analogue scale

(VAS), associated with palpation of the cervical region and questionnaires to investigate the quality of life related to pain, are the best forms of evaluation (CAMPOS; SANTOS, 2015). The pressure generated on palpation of the tense bands generates persistent clinical signs and symptoms that must be taken into account as an evaluative criterion of the PGM (CULPI; MARTINELL, 2018).

It is possible to assess pain using a visual analogue scale (VAS), which consists of a 0 to 10 centimeter ruler to quantify and calculate the pain intensity of patients in general, subjectively, and in addition, use a pressure algometer. to obtain a quantitative analysis of the perception of pain tolerance (PIOVESAN et al., 2001). Pressure algometry, considered a mechanical stimulus, is recognized as an objective and reproducible method to quantify local pain. This instrument identifies the pressure pain threshold (BOBATO et al., 2020).

In addition to pain quantification, it is crucial to assess quality of life and functionality, in this context the 12-Item Short-Form Health (SF-12) questionnaire is considered a faster alternative in the assessment of quality of life, when compared to the 36-Item Short-Form Health (SF-12) questionnaire. Item Health Survey (ANDRADE et al., 2007; SILVEIRA et al., 2013). The application of the SF-12 aims to subjectively analyze eight parameters that directly influence the quality of life, being physical function, physical aspects, pain, general health, vitality, social function, emotional aspect and mental health (SILVEIRA et al., 2013).). Also associated with these analyses, the Neck Pain and Disability Scale (NPDS) questionnaire is used to subjectively assess and diagnose, through questions, pain syndromes and musculoskeletal disorders common in the upper back and cervical regions, and may even reach in the occipital region (COOK et al., 2006).

After a well-designed evaluation process, it is possible to use some techniques for PGM rehabilitation, among several existing techniques for deactivating trigger points, acupressure and cupping therapy stand out. Acupressure is a technique that promotes the deactivation of PG in a non-invasive way, using ischemic compression that improves the condition. The technique consists of compressing the point for 90 seconds, using the digital pulps of the thumb, generating a slight pain at the site and, at the end, a relaxation position is sought so that they obtain a sensorial neurological silence, thus normalizing the tonus and reducing the pain threshold. Thus, acupressure is indicated for the treatment of tension nodules (MORI; MEJIA, 2014). The cupping therapy technique promotes increased blood circulation, tissue oxygenation and generates the release of connective tissue, relaxing the musculature and deactivating the PGMs (FARIA et al., 2019). The technique consists of deactivating the points by the negative pressure generated, you must place the suction cup in place and press the device twice, 1 to 5 minutes later, the suction cup is removed from the place by suspending the pin from the top. The suction cup generates muscle relaxation and pain reduction (CAMPOS; SANTOS, 2015; RIBEIRO et al., 2019; LEITE, 2019).

Therefore, neck pain is a problem present in the current scenario, and according to Leite (2019) acupressure and cupping therapy techniques are promising for the treatment of lowering the neck pain threshold.

The stress generated by academic graduation is considered one of the causes that predispose the emergence of cervical pain in university students. Although there are studies that do not prove the emergence of pain due to emotional stress in different samples, there are still few articles referring to techniques for evaluating and treating trigger

points in university students. In this sense, the objective of this study was to analyze the acute effect of cupping and acupressure techniques applied to trigger points in the cervical region of students and to compare the effectiveness between these techniques.

METHODOLOGY

ETHICAL PROCEDURE

A self-controlled clinical trial was carried out at the Teaching Clinic of the UNIFAFIBE University Center in Bebedouro-SP, with the opinion of CEP 4,769,080, after the consent was signed by the coordinator of the Clinic. Fourteen participants of both genders, who presented with chronic neck pain, were evaluated and treated.

SAMPLE SELECTION

The sample was initially composed of 16 participants, university students, who underwent evaluation, quantification of pain and functionality, and 2 participants were excluded because they did not meet the inclusion criteria of having at least 3 months of pain in the cervical region, consequently the study was conducted with 14 participants. This self-controlled clinical trial was conducted using a convenience sample, so that participants were matched subject to subject, with a mean age of 23 years (± 4.17 ; $p=0.22$) and a BMI of 25.3 kg/m² (± 4.85 ; $p=0.75$), the distribution of participants was random. The subjects were divided into: Acupressure Group (GA n=7) participants were treated with acupressure at points of tension; Cupping Therapy Group (GV n=7) participants were treated with cupping.

Volunteers aged between 20 and 40 years with chronic neck pain (greater than three months), clinically stable, who presented muscle tension, trigger points, and who were available to: answer the applied questionnaires,

participate in the tests and apply the alternative techniques applied by physical therapists. Those who had fractures at the site, duration of symptoms less than 3 months, who used medication more than 10 days a month, who underwent any type of acupuncture treatment in the last three months, smokers, pregnant or who did not agree were excluded. to sign the Free and Informed Consent Term.

EVALUATION PROCEDURES

Reviews

After the participants signed the informed consent form, they underwent a general assessment with anamnesis and physical examination, application of questionnaires and scales: Visual Analog Pain Scale (VAS), 12-Item Short-Form Health Survey (SF-12), Neck Pain and Disability Scale (NPDS) and a device: the Pressure Algometer. Each assessment was performed by the same examiner. The scales, the questionnaire and algometry were applied before and after the intervention. It is worth mentioning that before applying all the evaluation criteria, the participants were explained about all parts of the work and presented the questionnaires, scales and instruments that would be used.

Visual Analog Scale

Pain was subjectively assessed using the visual analogue scale (VAS), according to the patient's response. This scale contains a numbered line, on one end indicating 0 (no pain) and 10 on the other (worst pain ever felt). The collection of this data was performed in the form of a direct question to the patient, showing the scale and requesting the appointment of the region that most characterizes the pain intensity at that moment. The volunteers were evaluated subjectively using the following questionnaires: Visual Analogue Pain Scale (VAS), where with the patient seated in the

chair, the therapist displayed the scale from zero to ten, where zero is no pain and 10 is very intense pain and the patient classified the level of pain through his perception. It was used before the procedure and two days after the intervention.

Quality of Life Assessment

Quality of life assessment was performed using questionnaire 12 – Item Short-Form Health Survey (SF-12). The test was created with the intention of being a quick and simple way to assess quality of life in 8 different dimensions. Each dimension has a graduated scale, and the items evaluated are: physical function, physical aspect, pain, general health, vitality, social function, emotional aspect and mental health. In this questionnaire, the patient answered the questions faithfully after being addressed by the therapist, the answers were analyzed between a score ranging from 0 to 100 in relation to health-related quality of life (HRQoL), with 0 being the worst and 100 the best HRQoL It was used before the procedure and two days after the intervention. (ANDRADE et al., 2007).

Functional Disability Scale

Functional disability due to pain was assessed using the Neck Pain and Disability Scale (NPDS) questionnaire. This questionnaire is a tool used to subjectively diagnose and measure the patient's pain and functional disability, in relation to the disorder present in the cervical region. The questionnaire works with a score of 0 to 5 points, with 0 being considered normal and 5, the biggest problem situation that one can have. In this sense, 20 multidimensional questions were presented, involving: pain in the cervical region, pain intensity, effect of pain on emotional and effect of pain on functionality, therefore, subjectively analyzing the impacts of pain generated on functionality

and emotionality. of the patient. For the application of the Neck Pain and Disability Scale questionnaire, the patient was seated in the chair, the therapist displayed, explained and applied the questionnaire. It was used before the procedure and two days after the intervention. Therefore, it is considered without disability when the value is below 10% (less than 5 points); from 10 – 28%, minimal disability; from 30 – 48%, moderate disability; from 50 – 68%, severe disability; and above 72%, complete disability (VERNON; MIOR, 1991).

Quantitative Pain Analysis

For quantitative pain analysis, a Med. Dor® pressure algometer was used, which can quantify painful pressure through pressure on nociceptors. Then, for the evaluation, the patient sat and relaxed in the chair and the therapist applied the pressure algometer directly to the trigger point. The algometer display demonstrates the quantification of the participant's pain (measured in kgf) referring to the trigger point, the therapist noted the result and compared during reassessment and data analysis. It was used before and after the intervention on the same day.

INTERVENTION PROGRAM

After carrying out the pre-experimental assessments, the participants received the application of acupressure and cupping therapy techniques. The techniques were performed during a single session and applied by a qualified professional, trained in the techniques used. All interventions took place at the Teaching Clinic of the UNIFAFIBE University Center in Bebedouro-SP. After the intervention processes, evaluation procedures were performed again in order to compare the scenario before and after application of the techniques.

Acupressure Group (GA)

The participant was instructed to stay in a sitting position on a chair, wearing a bathing suit, and the qualified therapist performed the acupressure technique, in which the therapist applied pressure with the digital pad on the patient's painful point and held it for 90 seconds (Figure 1a), which is an experimental protocol.

Cupping Therapy Group (GV)

An experimental protocol was carried out, so that the participant was instructed to stay in a sitting position on a chair and wearing a bathing suit. Acrylic cups known as suction cups were applied to painful points in the cervical region by a qualified professional (Figure 1b). The suction cups are accompanied by a device that generates vacuum (gun), therefore, this was coupled to the suction cup and pumped twice at the location of the pain point or trigger point. After the cup adhered to the region of pain, an application time of 5 minutes was observed and the device was subsequently removed by suspending the rubber ring on the upper suction cup.

DATA ANALYSIS

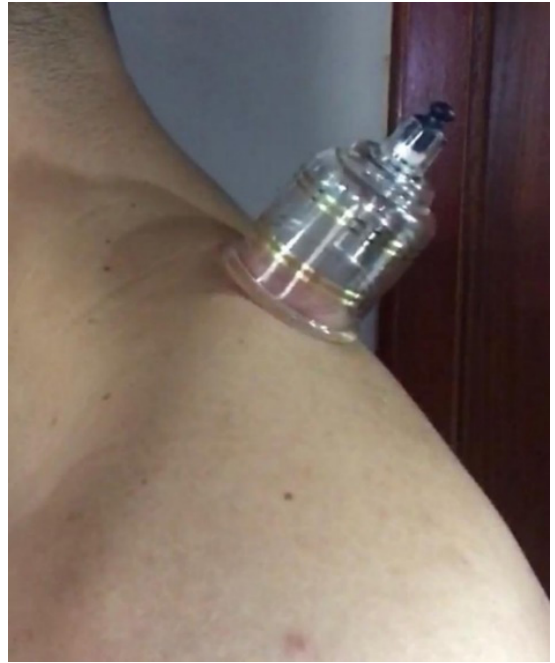
After data collection, the values obtained were normalized, tabulated and submitted to statistical analysis (Jomavi version 1.6. for Windows). Data were compared before and after the intervention process, using the paired sample t test. And to compare the techniques, the t test of independent samples was performed, both with a significance level of $p \leq 0.05$.

RESULTS

After analyzing the results, it was possible to observe an improvement in pain and quality of life with the application of acupressure and cupping therapy techniques in both intervention groups, as shown in Figures 2 and 3.



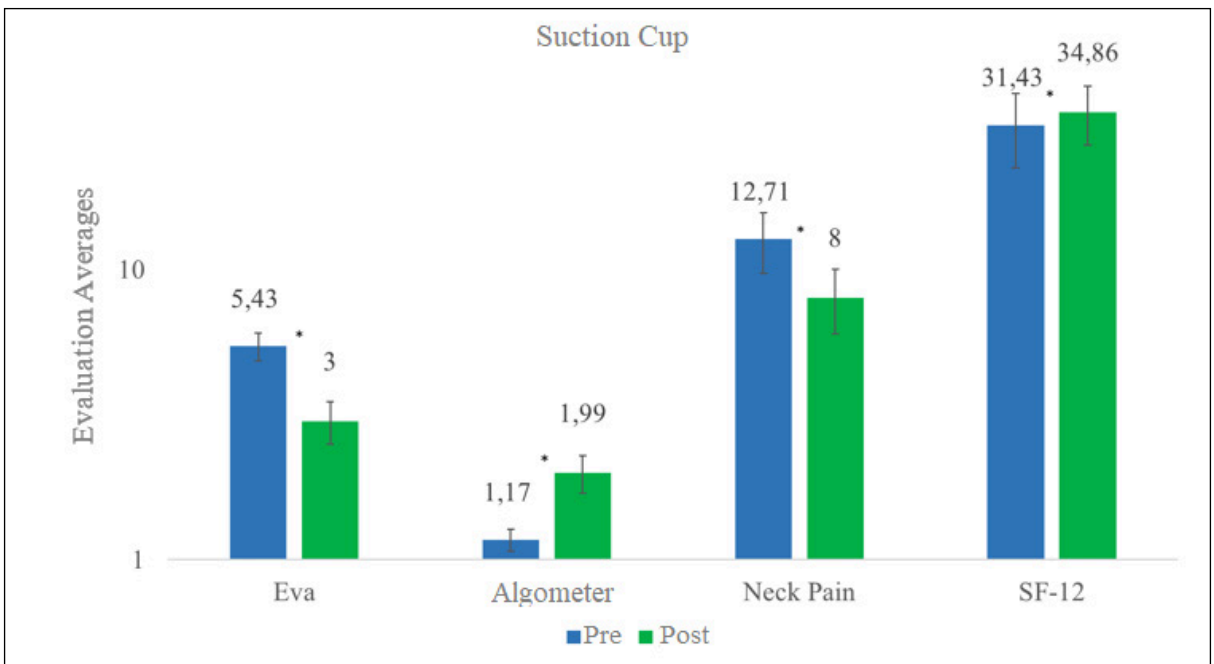
1a) Acupressure Technique



1b) Cupping Therapy Technique

Figure 1 – Application of techniques on pain points.

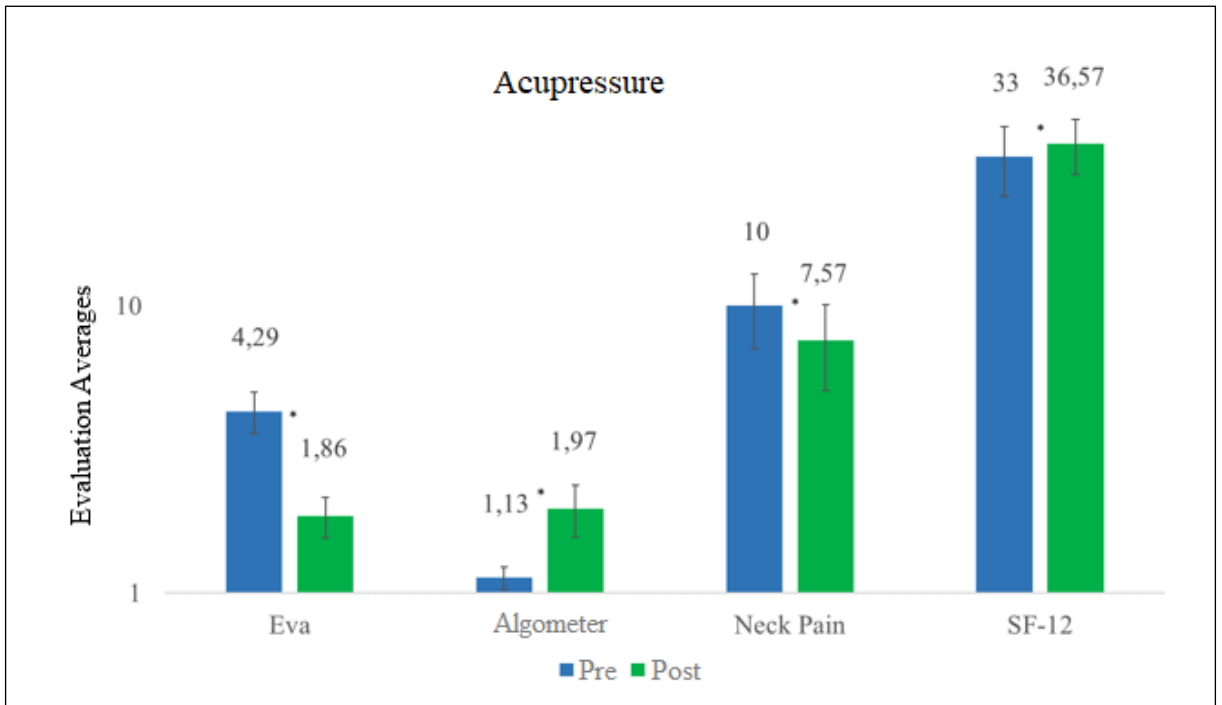
Source: own collection.



*= Significant ($p \leq 0.05$).

Figure 2 – Analysis of pain and quality of life data before and after the acupressure intervention process.

Source: own collection, 2022.



*= Significant ($p \leq 0.05$).

Figure 3 – Analysis of pain and quality of life data before and after the cupping intervention process.

Source: own collection, 2022.

Analyzed Variables (N=7)	Acupressure Group (\pm DP)	Suction Cup (\pm DP)	IC _{95%}	p-value
EVA-pre	5.43 (0.97)	4.29 (3.03)	-1.48 – 3.77	0.36
EVA-post	3.29 (1.97)	1.86 (1.95)	-0.85 – 3.71	0.19
Algômetro-pre	1.23 (0.48)	1.13 (0.60)	-0.53 – 0.73	0.73
Algômetro-post	1.94 (0.79)	1.97 (0.49)	-0.80 – 0.73	0.92
NeckPain-pre	12.43 (4.50)	9.86 (5.98)	-3.59 – 8.73	0.38
NeckPain-post	8.29 (2.92)	7.71 (4.64)	-3.95 – 5.09	0.78
SF-12-pre	31.43 (3.10)	33.57 (8.90)	-9.92 – 5.63	0.56
SF-12-post	34.86 (2.47)	36.00 (8.30)	-8.28 – 5.99	0.73

Subtitle: DP: (\pm Standard Deviation); 95%CI: Confidence Interval; * - significant ($p \leq 0.05$).

Table 1 – Results of the comparison between acupressure and cupping therapy techniques before and after the intervention process.

Source: own collection, 2022.

When comparing the effects of acupressure and cupping therapy techniques in order to assess which would be more effective for the treatment of cervical pain, it was possible to observe that there were no significant differences between pre and post-treatment, as shown in Table 1.

DISCUSSION

This study aimed to analyze the effects of acupressure and cupping therapy techniques applied to trigger points in the cervical region and to evaluate which technique would be more effective in pain and quality of life in university students. The main results when analyzing the results of the GA and GV were: (I) improvement of the pain after the application of acupressure; (II) improvement of pain after cupping (III) there were no significant differences between the application of acupressure or cupping.

The acupressure technique in the present study was in agreement with the findings of Cagnie et al. (2013) who used acupressure in nineteen office workers with complaints of neck and shoulder pain, 8 sessions were performed on the tender points. Subjects were tested at baseline (pre-control), after a 4-week no-treatment control period (post-control), and after a 4-week intervention training (post-treatment). And at the end of the study, they found that there was a significant decrease in overall neck and shoulder pain at post-treatment ($p \leq 0.001$) and at 6-month follow-up ($p \leq 0.003$) compared to pre-control and post-control. The authors concluded that the pain threshold increased post-treatment in all treated tender points ($p \leq 0.001$).

According to Freitas et al. (2008) who studied the effectiveness of the acupressure technique on trigger points in the upper trapezius muscle concluded that the data collected through the visual analogue pain scale showed that all subjects in the study had

a decrease in pain after the intervention.

For Bueno (2021), the application of the acupressure technique for 90 seconds in 18 participants promoted an increase in the pain threshold in a period of one week, using only a single session, that is, in a single session the participants endured a higher level of pain. of pain at the site.

The cupping therapy technique proposed to reduce trigger point pain proved to be effective in our study. Carmo et al. (2004) evidence that there is a great effectiveness of cupping therapy in the dissolution of muscle tension nodules, where a cupping therapy protocol was used for 15 to 20 minutes during 10 sessions and at the end 85% of patients reported absence or significant decrease in the amount of pain. In a randomized trial performed by Lauche et al. (2012), the intensity of pain was verified in 50 patients aged between 18 and 75 years who had neck pain for a period of 3 months, the patients received a suction cup application session, where they concluded that a single intervention with the cupping therapy technique is effective in decreasing the perception of pain.

This way, it was possible to observe that the intervention with acupressure and cupping therapy techniques benefited the relief of acute pain in university students.

FINAL CONSIDERATIONS

This study suggests that the application of acupressure and cupping therapy improves pain related to trigger points in a single session, but when comparing the best technique to reduce neck pain, there was no difference, thus, the application of the two techniques is safe for neck pain points.

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