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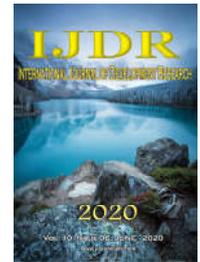
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COMPARATIVE STUDY OF MYOFASCIAL RELEASE TECHNIQUES AND POMPAGE TECHNIQUES FOR THE TREATMENT OF TENSION HEADACHE

Núbia Martins Correia, Wellington Bispo Nunes, Florence Germaine TibleLainscek, Georgia Stefani Cardoso de Camargo, Magna Cristina da Silva, Rafaela de Carvalho Alves, Sávia Denise Silva Carlotto Herrera, *Warly Neves de Araújo, Jacqueline Aparecida Philipino, Adelma Martins Pereira Thaíssa Araújo Vale dos Santos and Jéssica de Oliveira Sousa

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*Corresponding author: Warly Neves de Araújo

ABSTRACT

Introduction: Headache and a well-known condition that affects large numbers of people among young people and adults bringing great socioeconomic damage. Tension-type headache (TTH) has a predominance in adult women and a prevalence of 90% versus 67% of men. **Objective:** This study aimed to compare which technique, MRT or Pompage, had the best efficacy on TTH. **Materials and Methods:** Eight participants were recruited, aged between 22 and 59 years, with a medical diagnosis of TTH, these were divided into two groups, in the first group the Myofascial Release technique (G1) and the second group with the Pompage technique (G2) were used. These patients were submitted to a treatment consisting of ten sessions, with evaluation and applicability of the technique. The evaluation and analysis of their efficacy were made through the Headache Impact Test (HIT-6), evaluation form, visual analog scale VAC, and use of goniometer being applied to the patient at the beginning and the end of therapy. **Results:** Also corroborate with this study [De Oliveira Slepicka, 2017] because they demonstrate the effectiveness of myofascial release to relieve tension headache by conducting an experimental, quantitative and exploratory study with 20 subjects, selected after a screening form. The study showed that myofascial release can be effective in the treatment of tension headaches and can be considered a safe and effective form of treatment. **Conclusion:** It is concluded that both techniques were efficient in the treatment of TTH and that the difference in results between the two was minimal.

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INTRODUCTION

Headache is popularly known as headache is a condition that affects 90% of the world's population among young people and adults. The most common among them are tension-type headache (TTH), presenting its highest prevalence among women and university students, with an incidence between 25 and 55 years and its duration varies between minutes and days causing great damage in work and the daily life of the population, being responsible for the highest socioeconomic impact [De Sousa, 2016; Magazoni et al., 2018]. TTH can be classified into two groups: episodic tension-type headache (ETTH) and chronic tension-type headache (CTTH). It is classified CTTH when it occurs on less than 180 days per year and 15 days per month, can still be classified as frequent, when it occurs from 1 to 14 days per month, for at least 3 months or

infrequent, when it occurs on less than one day per month, that is, 12 days per year. ETTH has a higher prevalence in women than CTTH, which has a daily crisis of 30 minutes or even days and can reach months [Baracat, 2011; Bastos, 2013]. When the frequency is equal to or exceeds these values of 15 days per month, for at least 3 months, it is classified as CTTH [Matta, 2006]. TTH is a very common manifestation nowadays, characterized by mild to moderate pain, the individual has continuous (nonpulsatile) cephalic pain in the frontal, parietal, occipital, and temporal region bilaterally as if tightening the skull. It is characterized by involuntary and chronic contraction of the muscles of the neck and head region, whose stimulation and tension caused mainly by psychological disorders such as stress, anxiety, and depression and other related causes that are insufficient rest, hunger,

exaggerated physical exercises and bad postures can affect this pathology [Lima, 2016]. The pathophysiology of TTH is complex and little known, described by some authors as abnormal and exaggerated contracture of the muscles of the neck and skull nape regions, leading to muscle ischemia and release of algogenic substance caused pain. When the tendons are stiffened by a situation of tension and stress the muscles do not cease the contraction and the passage of blood to them may not be enough, with ischemia and consequently pain [Mendes, 2014]. Treatments for TTH involve pharmacological therapies such as anti-inflammatory and analgesic and non-pharmacological therapies. Among non-pharmacological therapies, physiotherapy is an alternative of great importance, as it enables combat and minimization, acting in symptomatological control. Among the resources that physiotherapy has for pain control, manual therapy is an important therapy, and among the techniques stand out pompage and myofascial release that aims to normalize muscle balance, the release of shortened fascias, promoting relaxation of muscle tissue and analgesia [Karolczak *et al.*, 2019], these techniques are chosen for this study. These two techniques have in common the work on a structure called fascia, being defined as a lamina of fibrous connective tissue, with variable thickness situated both superficially and deeply in the tissues and involving structures such as muscles, vessels, nerves and viscera and represents about 70% of human tissue [Bienfait, 1999]. Termed as a connective tissue membrane, the fascia has the function of aid to maintain muscle strength, to support muscle so that it exerts efficient contraction allowing the ease of sliding the muscles to each other. It can be handled manually or with the use of instruments (mechanically). The manipulation of these fascias performed by manual therapies tends to cause relaxation of the tissue and the structures related to it when it returns to the initial position [Dos Santos, 2018]. Myofascial release (MFR) is a passive characteristic technique performed by health professionals, using the hands, elbows, and fingers, or some specific instruments. It is applied to the soft tissue stimulating the mechanoreceptors present in the fascia causing the shortened muscles, retracted and the barrier that makes resistance to be attacked, allowing the tissues to spread, being considered as an involuntary movement, because it is done manually by the physiotherapist, not being by the muscle [Dos Santos, 2010].

MFR causes individuals who experience pain and muscle shortening to feel a sense of relief and well-being, because, it promotes an increase in local temperature by hand movement, promotes greater blood supply, mobilizes the shortened fascia, promotes relaxation, flexibility, improves the facilitation of body fluids, seeks analgesia by releasing the points of tension obtaining gain of range of motion and consequently improves the individual's breathing and good functioning of the musculoskeletal system [Da Silva, 2017]. Pompage is a manual technique that acts on the connective tissue, on the fascias consisting of intending the tissue subtly, slowly and progressively the segment to be treated, maintaining tension for a few seconds, and then progressively relaxing it, maintaining a good respiratory pattern during maneuvers [Bienfait, 1999]. Pompage is indicated for muscle contractures muscle pain, it alters the mechanical properties of the fascia such as density, stiffness, and viscosity so that the fascia can better adapt to physical stress, favoring circulation and gain of range of motion, muscle flexibility, promoting increased joint space and cartilage nutrition, favoring body realignment and muscle relaxation [Pereira, 2017; Antunes, 2017]. Given the

contexts addressed, this study aimed to compare which technique, MRT or Pompage, obtained the best efficacy on CTT.

MATERIALS AND METHODS

This study is quantitative and comparative field research that began after the submission and approval of the Ethics and Research Committee (ERC) of UnirG University Gurupi –TO, Brazil under CAEE: 19978219.3.0000.5518 and Opinion Number: 3,611,116 and the patient's consent after signing the Free and Informed Consent Form (FICF). The research took place at the School of Physiotherapy Clinic (SPC) of the same university, with the inclusion criteria for people of both sexes over the age of 18 years with a physician-proven diagnosis of CTT, the exclusion criteria were for those individuals with other types of headaches, recent fractures, open wounds, pregnancy, thrombosis, diabetes, infectious fevers, herniated discs, and people who were using drugs to treat CTT (participants who used analgesics on time for the crisis have not been ruled out). The selection of the sample was made for convenience and dissemination through posters affixed to the SPC mural and in the Basic Health Units (BHU) of Gurupi-TO. The sample consisted of 8 participants who were placed in 2 groups G1 and G2 each with 4 people selected through a raffle where group G1 received the MFR techniques and group G2 the Pompage technique. Ten meetings were held, the first for evaluation and the last for reassessment and the other eight were applied the techniques addressed that were performed once a week with a duration of 40 minutes each, the participants were evaluated through an evaluation form, questionnaire, Headache Impact Test (HIT-6), Visual Analog Pain Scale (VAPS) and goniometric evaluation to verify the range of motion (ROM) of cervical movements. Data tabulation, significance testing, and tables were performed from the Microsoft Excel tab® 2013 and the IBM SPSS Statistics 22® 2013. In addition to the descriptive analysis, the Pearson chi-square test was performed.

RESULTS AND DISCUSSION

The descriptive and statistical data of this research are presented numerically and percentageally in tables elaborated from the tab in Microsoft Excel® 2013 and the IBM SPSS Statistics 22® 2013 Program.

Table 1. Sample Description.

	G1		G2	
	Frequency	Percentage	Frequency	Percentage
Age Groups				
22 a 29 years	02	50%	03	75%
30 a 39 years	02	50%	-	-
40 a 49 years	-	-	-	-
50 a 59 years	-	-	01	25%
Total	04	100%	04	100%
Profession	Frequency	Percentage	Frequency	Percentage
Student	03	75%	03	75%
Beautician	-	-	01	25%
Administrator	01	25%	-	-
Total	04	100,0%	04	100,0%
Educational Level	Frequency	Percentage	Frequency	Percentage
Incomplet Graduation	03	75%	03	75%
Complete Graduation	01	25%	01	25%
Total	04	100%	04	100%

In addition to the descriptive analysis, the Pearson chi-square test was performed. The research sample comprises a universe

of 08 participants, being 04 participants of the treatment group with the Myofascial Release Technique (G1) and 04 of the treatment group with the Pompage Technique (G2). The participants were diagnosed with Tension Headache and started the treatments on 22/10/2019 and ended on 10/12/2019.

Table 2. Anamnesis

Anamnesis	G1	G2
Complaint Time	Frequency	Frequency
Days	02	01
Months	01	01
Years	01	02
Top Causes	Frequency	Frequency
Emotional stress	01	02
Anxiety	02	03
Hungry	-	-
Tiredness	-	02
Too many exercises	01	03
Bad posture	02	03
Pain Duration	Frequency	Frequency
Minutes	-	-
Hours	02	02
Week	02	01
Months	-	01
Associated Manifestations*	Frequency	Frequency
Physical Factors	01	03
Emotional factors	02	01
Other	01	01
Triggering Factors*	Frequency	Frequency
Meal feeding	01	02
Insomnia	03	03
Insufficient rest	01	02
Depression	02	-
Heavy workload	01	02
Associated Pathologies*	Frequency	Frequency
Migraine	04	04
SAH	-	-
MD	-	-
Skin disease	-	-
Other	-	-
Use of Medicine/ not for CTH treatment	Frequency	Frequency
Yes	04	04
No	-	-
Family History	Frequency	Frequency
Yes	02	03
No	02	01
Alimentation	Frequency	Frequency
Good	-	01
Regular	03	01
Poor	01	02
Sleep	Frequency	Frequency
Good	-	01
Regular	02	01
Poor	02	02
Affects Social	Frequency	Frequency
Yes	04	04
No	-	-
Complimentary Exams	Frequency	Frequency
Yes	-	-
No	04	04

Source: Participants of the comparative study between treatment through MFR and Pompage techniques.

* Several options could be reported simultaneously.

All selected participants are female, aged between 22 and 59 years (general mean of 29 years), for treatment with the Myofascial Technique the mean age was 27 years, and for treatment with the Pompage Technique the mean age was 31 years. As the participants answered about personal data, for the profession, in both groups 75% of the participants were students. Only 25% of the sample has a completed undergraduate course. Data presented in Table 1. Table 2 shows that the results presented using the anamnesis form, for the two groups analyzed, in some cases, the participants may present more than one effect. It can be highlighted that the

main causes of pain are, for G1, "anxiety", and for G2, "anxiety", "fatigue" and "bad posture". The pain tends to last "hours" for the two groups analyzed. Among the manifestations associated with the patient's condition, are the "emotional factors" for G1 and the "physical factors" for G2. The triggering factors most pointed out by the groups were "insomnia". All the participants, independent of the group, reported "migraine" as the associated pathology for the diagnosis of pain. Both groups use medication to alleviate the symptoms. Half of all the participants in both groups reported having a "bad" quality of sleep and eating between "regular" and "bad". The participants also reported that the symptoms affect their social coexistence, without exception. Table 3 presents information on the palpation of the head and neck muscles. By analyzing the data, all participants, regardless of the group, presented "pain on palpation" of the suboccipital muscles. Most participants reported "pain on palpation" of the trapezius muscle, being 04 in G1 and 03 in G2. The other information is contained in the table.

Table 3. Palpation of head and neck muscles*

Músculos	G1	G2
Trapezius	Frequency	Frequency
Pain on palpation	04	03
Nodules	02	02
Mobility	-	-
Sternocleidomastoid	Frequency	Frequency
Pain on palpation	04	02
Nodules	03	01
Mobility	-	-
Suboccipitals	Frequency	Frequency
Pain on palpation	04	04
Nodules	-	-
Mobility	-	-
Scalenes	Frequency	Frequency
Pain on palpation	03	02
Nodules	03	-
Mobility	-	-
Front	Frequency	Frequency
Pain on palpation	-	-
Nodules	-	-
Mobility	-	-
Temporal	Frequency	Frequency
Pain on palpation	03	01
Nodules	-	-
Mobility	-	-

Source: Participants of the comparative study between treatment through MFR and Pompage techniques.

* Several options could be reported simultaneously

Table 4. Pain assessment (VAC)

VAC	G1		G2	
	Inicial	Final	Inicial	Final
Absence of pain	-	03	-	02
Mild	-	01	-	02
Moderated	01	-	01	-
Intense	03	-	03	-

Source: Participants of the comparative study between treatment through MFR and Pompage techniques.

Table 4 presents the Pain Assessment according to the VAS scale. With the information, it is possible to verify that the participants, at the beginning of the treatment, for both groups had pain between "moderate" and "severe" and after the conclusion of the treatment the pain was reported "mild" to "no pain". In G1, 03 participants classified it as "no pain", and only 01 reported feeling "mild" pain. In G2, half of the participants reported: "no pain" and half reported feeling "mild" pain. When observing the results, it can be concluded that the treatment received by G1 was more efficient than that received

Table 5. Evaluation of Goniometry (ROM) *after therapeutic procedures

Degree of ROM	G1		Variation G1	G2		Variation G2
	Initial	Final		Initial	Final	
Cervical flexion	53,25	57,00	3,75	46,25	51,25	5,00
Cervical extension	43,25	47,00	3,75	37,50	42,00	4,50
Right lateral cervical tilt	36,25	40,25	4,00	38,75	39,25	0,50
Left lateral cervical tilt	36,00	40,75	4,75	38,75	39,50	0,75
Right cervical rotation	47,75	51,75	4,00	48,00	50,25	2,25
Left cervical rotation	48,75	52,50	3,75	47,25	51,00	3,75

Source: Participants of the comparative study between treatment through MFR and Pompage techniques

* Several options could be reported simultaneously

Table 6. Instrument headache impact test (HIT-6).

Questionrio	G1	G2
1 - When you have a headache, how often is the pain strong?		
Never (06)		
Rarely (08)		
Sometimes (10)	1	1
Veryoften (11)	2	2
Always (13)	1	1
2 - How often do headaches limit your ability to carry out your usual daily activities, including caring for the home, work, study, or social activities?		
Never (06)		
Rarely (08)	2	
Sometimes (10)	1	1
Veryoften (11)	1	3
Always (13)		
3 - When you have a headache, how often would you like to be able to lie down to rest?		
Never (06)		
Rarely (08)		
Sometimes (10)	1	1
Veryoften (11)	2	2
Always (13)	1	1
4 - During the past 04 weeks, how often have you felt too tired to work or to do your daily activities because of headaches?		
Never (06)		
Rarely (08)		1
Sometimes (10)	3	
Veryoften (11)	1	3
Always (13)		
5 - During the past 04 weeks, how often did you feel that you were no longer able to stand or feel irritated because of the headaches?		
Never (06)		
Rarely (08)	1	
Sometimes (10)	1	1
Veryoften (11)	1	3
Always (13)	1	
6 - For the past 04 weeks, how often have your headaches limited your ability to concentrate on your work or daily activities?		
Never (06)		
Rarely (08)	1	
Sometimes(10)	1	1
Veryoften (11)	1	2
Always (13)	1	1

in G2, since the values found showed a greater reduction in the pain scale of the group that received treatment with MFR, from that in the PT. Table 5 presents the Goniometry Assessment to measure the Range of Motion (ROM). The results show the initial and final ROM by the treatment group. It was found that regardless of the treatment group, all movements showed greater amplitude. However, when comparing the variations, it appears that for "cervical flexion" and "cervical extension", G2 showed better results. For "right lateral cervical inclination", "left lateral cervical inclination" and "right cervical rotation", G1 had better results. For "left cervical rotation" both groups had the same variation. This result indicates that treatment with the Myofascial Release Technique was more effective when comparing the gain in movement through the evaluation of goniometry. Table 6 presents the results of data collection by the treatment group. The results exemplify that most of the participants reported having a headache "very often" for the intensity of the pain (question 1), limiting to exercise daily activities (question 2),

the reason for irritability (question 5) and limiting for the ability to concentrate at work (question 6). Most participants reported the desire to rest during the sensation of pain (question 3) and the feeling of tiredness to work or perform daily activities (question 4). Table 7 shows the score of the data collection instrument, showing that on average G1 had pain on the scale of 63 points and G2 had pain on the scale of 65.5. Both groups presented results that classify pain as having a "very severe impact" on the participants' lives according to the score scale of the HIT-6 questionnaire. Table 8 presents the Chi-square test for the study variables. Pearson's Chi-square test is used to test the hypothesis that the variables are independent. What must be given attention to the test is the significance value, that the smaller the significance value less likely that two variables are not related. Thus, the closer to 0 the more likely that the variables are dependent, that is, are related. In the case of the sample, the values are between 0.135 and 0.406, showing that there is not enough evidence to say that one treatment was better than the other.

However, the surveyed sample can be considered homogeneous, since the participants presented very similar selection characteristics and obtained very similar results. This is due to the number of elements analyzed and the similarity between the results obtained by the analyzed treatments. At the end of the analyses, one can conclude that the best results were found in the group of participants who performed the treatment with the Myofascial Release Technique since the statistical findings after the procedures were more satisfactory than in the Pompage Technique.

Table 7. Punctuation

	G1	G2
Participants	Total	Total
1	65	58
2	63	68
3	64	66
4	60	70
Total per group	252	262
Average per group	63	65,5

Source: Participants of the comparative study between treatment through MFR and Pompage techniques

Table 8. Pearson's chi-squared test.

Variables	Chi-squared	df	Significance
VAC: G1 initial and G1 end	4,000	4	0,406
VAC: G2 initial and G2 end	4,000	2	0,135
HIT-6: Variation between G1 and G2	12,000	9	0,213
ROM: Variation between G1 and G2	12,000	10	0,285

Source: Participants of the comparative study between treatment through MFR and Pompage techniques.

This article has shown that in this line of reasoning, tensional headache is very frequent and its causes are associated with several situations such as stress, anxiety, excessive worry, emotional tension, depression, cervical pain, sleep alterations, appetite, and ocular effort. Moreover, there is the impasse of the lack of medical training to diagnose the disease, observed in the study of ^[14], who found that 82% of the doctors interviewed (non-neurologists who perform primary health care) were unaware of the classification and diagnostic criteria of all types of headaches. Participants in this study presented headaches due to anxiety, insomnia, fatigue, and poor posture. Because of that, the techniques presented here were considered efficient for the symptoms present, since Pompage is a manual therapy technique that promotes muscle relaxation due to light movements, done slowly and progressively. Therefore, there is a reduction of apprehensive feelings, fear and consequently, pain is reduced [Antunes, 2017]. No studies were found in the available literature related to Pompage and myofascial release. However, some studies have verified the techniques separately, both to improve the symptoms of tensional cephalaea^[15], analyzed the efficacy of Pompage in the cervical spine for the treatment of tension-type headache and verified after ten sessions that there was significant improvement after the application of the technique. In this bias, in a study on the effects of Myofascial Release on the quality and frequency of pain in women with tension-type headache ^[16], reports that manual therapy, using myofascial techniques has shown to be very effective in cases of tension-type headache, where there is a decrease in the frequency, intensity, and duration of the pain, increased range of motion of the cervical region, decreased use of medication, thus influencing the improvement of quality of life, and can be used both as an adjunct therapy, as an alternative therapy for treatment. Thus, it corroborates with the findings presented in this study.

The decrease in the pain in the present study can be explained by [Gosling, 2013] that states the use of manual therapy as a physiotherapeutic resource to improve the pain in the participants, as it reduces painful stimuli and hyperactivity of the sympathetic nervous system with a consequent decrease in noradrenaline, prostaglandins, and decrease in muscle tension. In this line of reasoning [Guimarães], brings the effect of myofascial release in the treatment of tensional headache in a review of the literature. From the findings, it was possible to conclude that 100% of the studies presented positive results, demonstrating the efficiency of the technique used. Thus, this technique has already been used only with the function of relaxation and is now seen as a form of treatment in the health area for relieving tension through the release of trigger points, in addition to other benefits. Also corroborate with this study [De Oliveira Slepicka, 2017] because they demonstrate the effectiveness of myofascial release to relieve tension headache by conducting an experimental, quantitative, and exploratory study with 20 subjects, selected after a screening form. The study showed that myofascial release can be effective in the treatment of tension headaches and can be considered a safe and effective form of treatment.

CONCLUSION

The performance of manual therapy in tension headache is very effective, taking into account the relief given to the patient with the use of both techniques that were used in this study. It was observed that both techniques had satisfactory effects on both pain relief and cervical ROM gain, with the emphasis that Myofascial Release presented better feedback of the participants and showed a lower intensity of pain collected in VAS and an improvement in ROM compared to Pompage. Also, they can be used as preventive methods for CTT avoiding the unregulated use of drugs. However, new studies addressing the subject should be done to prove the efficacy of the MRT and Pompage, through larger samples, because this study presented as a limitation showed a small number of participants.

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