International Journal of Physical Education, Sports and Health 2017; 4(3): 207-211

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2017; 4(3): 207-211

www.kheljournal.com
Received: 09-03-2017
Accepted: 10-04-2017

Dr. Basavaraj Motimath
Associate Professor and HOD, Department of Sports Physiotherapy, KLEU Institute of Physiotherapy, Belagavi, Karnataka, India

Dr.Nabeel Ahammed
(MPT), Department of Sports Physiotherapy, KLEU Institute of Physiotherapy, Belagavi, Karnataka, India

Correspondence
Dr. Basavaraj Motimath
Associate Professor and HOD, Department of Sports Physiotherapy, KLEU Institute of physiotherapy, Belagavi, Karnataka, India

Comparative study on effectiveness of trigger point release versus cervical mobilization in chess players with mechanical neck pain

Dr. Basavaraj Motimath and Dr. Nabeel Ahammed

Abstract
Background: Mechanical neck pain can be defined as generalized neck and/or shoulder pain with mechanical characteristics including symptoms provoked by maintained neck postures or by movement. Mechanical neck pain causes morning stiffness, pain on forward flexion and also returning to erect position, pain is often aggravated by extension, lateral flexion, rotation and exercises. When playing chess on chess board for many hours continuously the players may notice increasing aches and pain in neck.
Objective: To find out the effectiveness of trigger point release versus cervical mobilization in chess players with mechanical neck pain
Study design: Pre-test Post-test Experimental study design
Methods: Subjects will be randomly selected through inclusion criteria and exclusion criteria. Pre and post treatment assessment of pain and Disability using Neck Disability Index and range of motion using Universal Goniometer will be taken Subject will be assigned to group A and group B with 15 patients in each group. Treatment will be given 3 sessions in 1 week for 1 month duration.
Outcome Measures: Neck Disability Index and Universal Goniometer
Results: There is significant difference in effectiveness of trigger point release versus cervical manipulation in chess players with mechanical neck pain.
Conclusion: This experimental study was performed on 30 subjects 15 subjects in each group with complaints of neck pain with intervention in the form of trigger point release and SNAG. The group treated with SNAG approach had significant improvement in ROM of cervical joint, pain and disability due to mechanical neck pain than those treated with trigger point release.

Keywords: Trigger point release, sustained natural apophyseal glide, chess player, mechanical neck pain, range of motion

Introduction
Mechanical neck pain can be defined as generalized neck and/or shoulder pain with mechanical characteristics including symptoms provoked by maintained neck postures or by movement, or by palpation of the cervical muscles. Although the exact pathology of idiopathic neck pain is not completely understood[1].Mechanical neck pain usually doesn't cause weakness or numbness in the arm or hand because the problem is not from pressure on the spinal nerves [2]. Mechanical neck pain causes morning stiffness, pain on forward flexion and also returning to erect position, pain is often aggravated by extension, lateral flexion, rotation and exercises. Mechanical neck pain affects 45–54% of the general population at some time during their lives and can result in severe disability [3]. Certain studies states that the incidence of neck pain and median age are 35% and 27 years respectively[4]. Determining the most appropriate intervention for individuals with neck pain remains a priority for researchers. Physiotherapy is usually the first management approach for patients with mechanical, idiopathic insidious neck pain, and manual therapy is often the preferred intervention [5]. Major causes of many of these disorders and injuries are technological advances increased use in repetitive motions, competitive work environments, inflexible workstations design and poor education/training on proper workstation design [8]. Mulligan concept of mobilization with movements (MWMs) first used in cervical spine, carry the acronym SNAGS. It stands for sustained natural apophyseal glides used to improve function restriction or pain in flexion, extension, rotation, side flexion of

cervical spine [10]. SNAG is the technique where an accessory glide is applied to the spinal segment with a concurrent force sustained at the end of the range. According to mulligan the effect of MWMs is based on the premise that pain is associated with positional fault in joint with resultant subtle "biomechanical" changes such as joint restriction and stiffness.[11] Trigger point is a hyperirritable spot within a palpable taut band of a skeletal muscle that is painful on compression, stretch or overload of the affected tissues and that can give rise to a typical referred pain pattern. Myofascial trigger points from neck and shoulder muscles might play an important role in the genesis of mechanical neck pain. [12] There are epidemiological studies suggesting that trigger points represent an important source of musculoskeletal disorder. [13] Trigger point therapy an reduce pain, increase movement, and allows the muscles to lengthen and become stronger again. To treat trigger points, heavy pressure must be applied to the trigger point. MWMs are mobilizations with movement and are applied to the peripheral joints. NAGS are natural apophyseal accessory glides applied to the cervical spine with the patient passive. SNAGS are sustained natural apophyseal accessory glides whereby the patient attempts to actively move a painful or stiff joint through its range of motion whilst the therapist overlays an accessory glide parallel with the treatment plane.

Sustained natural apophyseal glides used to improve function restriction or pain in flexion, extension, rotation, side flexion of cervical spine. [14] According to mulligan the effect of MWMs is based on the premise that pain is associated with positional fault in joint with resultant subtle "biomechanical" changes such as joint restriction and stiffness. [15]

A Trigger point (TrP) is defined as a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. There are several precipitating and perpetuating factors such as mechanical, nutritional, metabolic, and psychological factors resulting in the formation of Trigger points. Presence of tender spot within the taut band in skeletal muscles, Palpable or visible local twitch response, Jump sign, typical reffered pain pattern are the important signs of TrPs. [16, 17]

Active TrPs cause clinical symptoms, and their local and referred pain is responsible for patients' complaints. An active TrP is distinguished from a latent one when referred pain elicited by pressure applied to the TrP is recognized as a recent, familiar pain by the subject. In patients, this elicited pain corresponds to at least part of their clinical pain complaint. Both active and latent TrPs can provoke motor dysfunctions, e.g., muscle weakness, muscle imbalance, altered recruitment pattern of the stabilizer muscles, or muscle inhibition [18] in either the affected muscle or in functionally related muscles [19]. Furthermore, latent TrPs may not be an immediate source of pain, but they can elicit referred pain with mechanical stimulation or muscle contraction. In addition, latent TrPs may disturb normal patterns of motor recruitment and movement efficiency [20]

The formation of TrPs may result from a variety of factors, such as severe trauma, overuse, mechanical overload, or psychological stress [21]. Although the etiology of TrPs is not completely known, recent studies have hypothesized that the pathogenesis of TrPs results from injured or overloaded muscle fibers [22]. This could lead to endogenous (involuntary) shortening, loss of oxygen supply, loss of nutrient supply, and increased metabolic demand on local tissues [23]. The most credible etiological explanation of TrPs is the integrated hypothesis, which suggests that abnormal depolarization of motor endplates and sustained muscular shortening give rise to a localized "ATP energy crisis" associated with sensory and autonomic reflex arcs that are sustained by central sensitization [24]. A recent study provides evidence of sympathetic facilitation of mechanical sensitization and facilitation of the local and referred pain reactions in TrPs. [25]

Methods and Materials

A pre-post experimental study was conducted on 30 Subjects. Subjects were assigned to group A and group B with 15 patients in each group. Inclusion criteria was both Male and Female chess players age group between 18 to 25 chess players who play infront of chess board more than 1 hour. Exclusion criteria was Recent undergone surgery or any acute inflammation in neck, spinal pathology (spondylolisthesis), person with ankylosing spondylitis, any open wound around the neck, history of cervical fracture, infection & dislocation and Those who play chess in laptop. Ethical approval was obtained prior to the study. Written informed consent was taken from the subjects. For each patient baseline assessment was obtained and brief demonstration about intervention explained. All subjects were instructed to discontinue if they had any form of discomfort during the procedure.

Procedure

The subjects were randomly selected through inclusion criteria and informed consent was taken from the subject's Demographic data will be collected. The subjects were explained about the treatment. The subjects were positioned comfortably and assessed thoroughly about his/her condition. Pre and post treatment assessment of pain using Pain numeric rating scale, Disability using Neck Disability Index and range of motion using Universal Goniometer was taken. Subjects were assigned to group A and group B with 15 patients in each group. Treatment was given 3 sessions in 1 week for 1 month duration.

Patients were divided into two groups:

In group A Trigger point release was given to the patients who having mechanical neck pain. The diagnosis of the TrP was performed following five diagnostic criteria: Presence of a palpable taut band in a skeletal muscle, Presence of a hypersensible tender spot in the taut band, Local twitch response elicited by the snapping palpation of the taut band, Reproduction of the typical referred pain pattern of the TrP in response to compression. Spontaneous presence of the typical referred painpattern and/or patient recognition of the referred pain as familiar. Trigger point release given in sternocleidomastoid, levator scapulae, upper trapezius and sub occipital muscles Patient position was sitting or laying.

For group B cervical mobilization (SNAG) sustained natural apophyseal glides was given. SNAG sustained natural apophyseal glides was applied by the therapist using 2-3 sets of 4-6 repetition for each level of cervical spine, for improving extension, rotation, and side flexion. The subject was in sitting position and the therapist stands behind him. The medial border of one thumb is placed on the tip of the spinous process vertebrae. The thumb was slope at 45 degrees in the direction of eyeball and the other thumb reinforce this other finger are comfortably placed laterally on each side of the neck. Treatment was given for 1 minute per trigger point.

For rotation glide spinous process up in direction of treatment plane. Glide is being maintained and subject turns his head slowly towards the restricted side and sustain for few seconds.

For side flexion glide spinous process up in direction of treatment plane. Glide is being maintained and subject tilts his

head towards the restricted side and sustain for a few seconds. For extension glide spinous process up in the direction of treatment. Glide is being maintained and subject extends slowly towards the restricted side and sustains for a few seconds

Data Analysis

SPSS16.0 software was used to find out the statistics mentioned below:

Kolmogorov-Smirnov test was done to find out the normality. Paired t test was used as parametric test to find out the intra group significance. Wilcoxon signed rank test was used as non parametric test to find out the intra group significance. Independent t-test were used to analyze inter-group significance. Mann Whitney U-test was used to analyze inter-group significance.

Result

When comparing the post test values of NDI, extension ROM, lateral rotation ROM and lateral flexion ROM of both control and experimental group through analysis of inter group significance; NDI shows calculated t-value=2.138(>table value=2.048,df-28 at p=0.05) in independent sample t-test, extension ROM shows sig. value 0.045 in Mann Whitney U-test (p<0.05), lateral rotation ROM shows sig. value 0.047 in Mann Whitney U-test (p<0.05) and lateral flexion ROM shows sig. value 0.001 in Mann Whitney U-test (p<0.05). This shows that experimental group shows significant difference from control group in all outcome measures. Hence, we can reject null hypothesis & accept the alternate hypothesis that, there is significant difference in effectiveness of trigger point release versus cervical manipulation in chess players with mechanical neck pain.

	Outcome measures		N	Mini mum	Maximum	Mean	Std. Deviation(±)
	NDI	PRE-TEST	15	32	54	45.46	6.255
		POST-TEST	15	18	36	30.53	5.527
	EXTENSION	PRE-TEST	15	40	55	47.67	5.3
GROUPA		POST-TEST	15	50	65	57	5.606
	LAT ROTATION	PRE-TEST	15	40	55	52	5
		POST-TEST	15	55	70	61	4.08
	LAT FLEXION	PRE-TEST	15	25	35	29	3.872
	NDI	PRE-TEST	15	32	54	44.27	7.004
		POST-TEST	15	18	34	24.133	5.974
	EXTENSION	PRE-TEST	15	40	55	46.667	6.172
GROUP B		POST-TEST	15	50	65	58.667	4.418
	LAT ROTATION	PRE-TEST	15	40	55	49.333	5.3
		POST-TEST	15	55	70	62	4.92
	LAT FLEXION	PRE-TEST	15	20	35	29	4.705
		POST-TEST	15	30	45	38.66	4.418

Mean and Standard Deviation of Scales Used In both Group A and Group B

Discussion

This study is to find out the in effectiveness of trigger point release versus cervical manipulation in computer professionals with mechanical neck pain. Mechanical neck pain can be defined as generalized neck and/or shoulder pain with mechanical characteristics including symptoms provoked by maintained neck postures or by movement, or by palpation of the cervical muscles. Although the exact pathology of idiopathic neck pain is not completely understood

In this study, Subjects with mechanical neck pain are taken into consideration. From a large number of subjects with mechanical neck pain the subjects are selected by the proper screening and fulfilling the inclusive and exclusive criteria. 30 patients diagnosed with mechanical neck pain, disability and ROM deficit was selected and grouped into group A and group B (15patients in each group). The group A received Trigger point release with ergonomic advice will be given to the patients who having mechanical neck pain and group B cervical mobilization (SNAG) with ergonomic advice will be given, for a treatment duration will be given 3 sessions in 1 week for 1 month.

The outcome measures used of pain and disability using Neck Disability Index and range of motion using Universal Goniometer. Each measurement was done on the first day of treatment (pre test) and on the last day of the treatment (post test). Then data's were analyzed statistically.

Statistical data reveals that significant difference in effectiveness of trigger point release versus cervical manipulation in computer professionals with mechanical neck pain.

The Mulligan concept is integral to the clinical practice of many physiotherapists and includes techniques such as sustained natural apophyseal glides (SNAGs), natural apophyseal glides (NAGs) and mobilization with movements (MWMs).Several clinical studies have suggested that these techniques are an effective physiotherapeutic tool in the treatment of neuromuscular pain and dysfunction

SNAGS are sustained natural apophyseal accessory glides whereby the patient attempts to actively move a painful or stiff joint through its range of motion whilst the therapist overlays an accessory glide parallel with the treatment plane.

The neurophysiologic mechanism by which spinal manipulative therapy is effective in reducing pain is not completely understood. One possible mechanism for improvement in the intervention group in the present study could be that the manipulative procedure may induce a reflex inhibition of pain or reflex muscle relaxation by modifying the discharge of proprioceptive group I and II afferents.

A second possible mechanism for the improvement in the intervention group might be a pre synaptic inhibition of segmental pain pathways and possibly activation of the endogenous opiate system.

Trigger point (TrP) is defined as a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. There are several precipitating and perpetuating factors such as mechanical, nutritional, metabolic, and psychological factors resulting in the formation of Trigger points. Presence of tender spot within the taut band in skeletal muscles, Palpable or visible local twitch response, Jump sign, typical reffered pain pattern are the important signs of TrPs.

Trigger point treatment successfully release trigger points by

holding pressure steadily on a trigger point until it releases and sliding the finger, hand, etc along a usually veinous direction of a muscle, creating a vacuum/suction effect upon the circulation which "flushes" the tissue rapidly, introducing freshened circulatory fluids quickly as well as "dumping" inflammatory chemicals present in the tissue back into general circulation. They are creating a compression to the tissue that temporarily compromises the circulation. The body responds to the compromise, which strives toward equilibrium, by sending a "flush" of blood and lymph, which contain constituents that temporarily alleviate pain (endorphins), which also "flush" out inflammatory chemicals (substance P, prostaglandins, bradykinin, etc.),and which also contain energy constituents for metabolic recovery for both the myofascial tissue and the neuromuscular junctions.[26]

In a study, Muñoz-Muñoz S *et al.* concluded that the referred pain elicited by active MTrPs in the neck and shoulder muscles contributed to symptoms in mechanical neck pain.

In this study, there has been an increase in ROM of cervical joint and reduction of pain and disability by the application of SNAG. According using of outcome measures of NDI and GONIOMETER clearly proven that SNAG is more better that trigger point release

Hence, the study reveals that Hence, the study reveals SNAG shows greater improvement than TRIGGER POINT RELEASE on disability and ROM in individuals with mechanical neck pain.

Conclusion

In conclusion, this experimental study was performed on 30 subjects 15 subjects in each group with complaints of neck pain with intervention in the form of trigger point release and SNAG. The group treated with SNAG approach had significant improvement in ROM of cervical joint, pain and disability due to mechanical neck pain than those treated with trigger point release.

Limitations

Patients included in this study were limited to those referred to a single unit. The study was conducted on a small sample size which might affect the generalization of results. Duration of study was less. Age group was only between 18yrs and 25yrs.Samples taken were of Acute patients only. All measurements were taken manually and this may introduce human error which could affect the reliability of the study. NDI are subjective assessment tool, so there might be some errors while filling the scores by patient themselves.

References

1. Gross AR, Kay T, Hondras M, *et al.* Manual therapies for mechanical neck disorders: a systematic review. Man Ther. 2002; 7:131-149.
2. Neck pain, orthopaedics and orthpaedics and surgery products, orthogate orthozilla search engine, 2006.
3. David J, Magee: Orthopedic physical assessment of cervical spine, 3rd edition. Published by W.B. Saunders, 1997; 316.
4. Coˆ te´ P, Cassidy JD, Carroll L. The Saskatchewan health and back pain survey. The prevalence of neck pain and related disability in Saskatchewan adults. Spine, 1998; 23:1689-98.
5. Dr. Deepak Sharan. A Prevalence study of neck disorders in Bangalore, Deccan Heralds, 2004-2005; 3(2):23-35. www.deepak sharan.com/toi column.
6. Childs JD, Cleland JA, Elliott JM, *et al.* Neck pain clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther, 2008; 38:A1-A34.
7. Rossignol AM, Morse EP, Summers VM, Pagnotto LD. Video display terminal use and reported health symptoms among Massachusetts clerical workers. J Occup Med. 1987; 29:112-8.
8. Korhonen T, Ketola R, Toivonen R *et al.* Work related and individual predictors for incident neck pain among office employees working with video display units. Occup Environ Med 2003;60:475–82
9. U.S. Department of Labor Ergonomics the study work. OSHA, 1991; 3125:1-19.
10. Sharma AK, Khera S, J. Khandekar. Indian Journal of Community Medicine. 2006; 31(1)
11. Konstantinou K, Foster N, Rushton A, Baxter D. The use and reported effects on mobilization with movement techniques in low back pain management; a cross sectional descriptive survey of physiotherapists. Manual Therapy 2002; 7(4):206-14.
12. Abbott JH. Effect of mobilization with movement on shoulder impairment and functional limitation: a case report. The Journal of Manual and Manipulative Therapy 1998; 6(2):208.
13. Vicenzino B, Paungmali A, Buratowski S, Wright A. Specific manipulative therapy treatment for chronic lateral epicondylalgia produces uniquely characteristic hypoalgesia. Manual Therapy 2001; 6(4):205-12.
14. Gross AR, Hoving JL, Haines TA, Goldsmith CH, Kay T, Aker P, *et al.* Cervical overview group, The Cochrane Collaboration. Manipulation and mobilization for mechanical neck disorders
15. Effectiveness self snag over conventional physiotherapy management in chronic neck pain among computer professionals, Shilpi Chabra Deepthi Chabra *et al.* 2007-2008, 2.
16. Simons DG, Travell JG, Simons LS. Travell and Simons' myofascial pain and dysfunction: the trigger point manual. Upper half of body. Baltimore: Williams & Wilkins, 1999, 1.
17. Ferna´ndez-de-las-Pen˜ C. as, C. Alonso-Blanco, J.C. Miangolarra Myofascial trigger pointsin subjects presenting with mechanical neck pain: A blinded, controlled study j manual therapy, 2007, 12.
18. Headly B. The use of biofeedback in pain management. Physical Therapy Practice 1993; 2:29-40.
19. Simons DG, Travell J, Simons LS. Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual. 2nd ed, 1.
20. KR Polus BI, Rich PA. Latent myofascial trigger points: their effects on muscle activation and movement efficiency. J Bodywork Mov Ther 2004; 8:160-166.
21. Gerwin R. Headache. In: Clinical Mastery in the Treatment of Myofascial Pain. Philadelphia, PA: Lippincott Williams & Wilkins, 2005; 1-24.
22. Gerwin RD, Dommerholt D, Shah JP. An expansion of Simons' integrated hypothesis of trigger point formation. Curr Pain HeadacheRep 2004; 8:468-475.
23. Simons DG. Review of enigmatic MTrPs as a common cause of enigmatic musculoskeletal pain and dysfunction. J Electromyogr Kinesiol. 2004; 14:95-107.
24. McPartland JM, Simons DG. Myofascial trigger points: Translatingmolecular theory into manual therapy. J Man

Manipulative Ther in press. 2006.
25. Ge HY, Fernandez-de-las-Penas C, Arendt-Nielsen L. Sympathetic facilitation of hyperalgesia evoked from myofascial tender and trigger points in patients with unilateral shoulder pain. Clin Neurophysiology 2006; 117:1545-1550
26. http://www.Search through over 11 million science, health, medical journal full text articles and books./science/article/pii/S0003999312009045 (Changes in Blood Flow and Cellular Metabolism at a Myofascial Trigger Point with Trigger Point Release (Ischemic Compression): A Proof-of-Principle Pilot Study.