

EFFECTIVENESS OF GIVING ZYGAPOPHYSEAL MANIPULATION WITH IFT TO IMPROVE FUNCTIONS OF BACK - AN EXPERIMENTAL STUDY

¹Rajkumar.S.K, ²Shanthoshraja.Y, ³Edwin.S

¹Principal, ²Associate Professor, ³Tutor
Swamy Vivekanandha Physiotherapy College, Namakkal, Tamil Nadu.
Affiliated to The Tamil Nadu Dr.MGR Medical University, Chennai.

Abstract-

BACKGROUND: Backbone or Vertebral column formed by 33 bones. In many are non fused and some are fused. There 23 Inter-vertebral disc in human body. The backbone is maintain our body postural in rest and active of all positions. The muscles of backbone & abdomen and soft tissues structure are giving stability of our trunk. The Vertebral column connect our upper and lower extremities. As per World Health Organization, Mechanical Low back pain (LBP) describes pain between the lower edge of the ribs and the buttock. It can last for a short time (acute), a little longer (sub-acute) or a long time (chronic). It can affect anyone by non pathological and over load on back like weight lifting or sudden movements.

AIM & OBJECTIVE: To find out effectiveness of giving zygapophyseal manipulation with IFT to improve functions of back.

Methodology: 20 subjects of age group 45 - 55 years were selected, who fulfilled the inclusion Criteria. Out of the 20 patients 15 subjects who were suffering from mechanical LBP and also those who scored between 35 - 45 in Back Pain Function Scale (BPFS). 15 subjects who selected were treated zygapophyseal manipulation with IFT for a period of 5 days. The pretest and post-test measurement was taken by using BPFS.

RESULT: The pretest and post-test mean values of BPFS scored was analyzed using the paired 't' test. For 14 degrees of freedom and 5% level of significance, the table's value is 1.729 and calculated 't' value 17.31. Since the calculated value was greater than table's value null hypothesis is rejected.

CONCLUSION: This study it can be concluded that zygapophyseal manipulation with IFT to improve functions of back.

Keywords: BPFS, Mechanical Low Back Pain, IFT, Zygapophyseal Manipulation, Vertebral Column.

INTRODUCTION:

Backbone or Vertebral column formed by 33 bones. In many are non fused and some are fused. There 23 Inter-vertebral disc in human body. The backbone is maintain our body postural in rest and active of all positions. The muscles of backbone & abdomen and soft tissues structure are giving stability of our trunk. The Vertebral column connect our upper and lower extremities. Zygapophyseal joints are synovial joint type and plain variety. There are 3 degrees of freedom in all Zygapophyseal joints, Totally six or combination of movements in minimal ROM. As per World Health Organization, Mechanical Low back pain (LBP) describes pain between the lower edge of the ribs and the buttock. It can last for a short time (acute), a little longer (sub-acute) or a long time (chronic). It can affect anyone by non pathological and over load on back like weight lifting or sudden movements. Head-Arm-Trunk (HAT) weight transmission to pelvic by bio-mechanical description (As per LoG, CoG & Curvature of Vertebral Column). Soft tissues of vertebral column (Ligaments, Muscles & Tendons) support and maintain the normal alignment of the trunk. Any over load or force by externally or internally to affect the low back. It may decreased the functions of low back due to increased the pain stimuli over low back. The Back Pain Functional Scale (BPFS) is a subjective scale used to measure the patient's physical function after low back pain. Score 0 is low function 60 is normal function of back. This scale was developed by Stratford et al. (2000) . To find out effectiveness of giving zygapophyseal manipulation with IFT to improve functions of back for a period of 5 days.

METHODOLOGY:

A total number of fifteen subjects were selected in Physiotherapy Department of Swamy Vivekanandha Physiotherapy College, Namakkal by purposive sampling method by who fulfilled the inclusion criteria. The study was pretest and

post-test for a single group experimental study in nature. The treatment was conducted for a period of 5 days. The subject was selected by using purposive sampling method. pretest taken using BPFS score assigned to zygapophyseal manipulation with IFT. The Inclusion Criteria are patients Age between 45 – 55 years patients have selected in this study, Suffering from mechanical LBP, the subjects were selected 35 - 45 score in BPFS. The Exclusion Criteria are the score below 35 & above 45 in BPFS, Uncooperative patients and other Pathological or associated problems of Cardio-Neuro-Musculo-Skeletal issues in low back . Before the patient treatment all the subjects were explained about the study and the procedure to be applied. They were asked to inform if they any discomfort during the course of study. Written consent was obtained from all the subjects.

PROCEDURE:

The person was made to relax sitting on treatment table for taking assessment. Before starting the treatment protocol, We collect BPFS score from all subjects. The BPFS score should be 35 - 45. The same protocol for all 15 patients in all 5 days. After five days of protocol we were collected BPFS score again from all 15 patients.

Protocol:

All subjects should be checked vital signs before starting program in all 5 days. Only stable persons should involve in to our study. We must check the precautions of Patient, Treatment table and IFT apparatus always.

Zygapophyseal Manipulation:

Patients Position: Relaxed Prone Lying, Both hand place forward & below the forehead proper billow position

Command: Get relax, Take normal breath

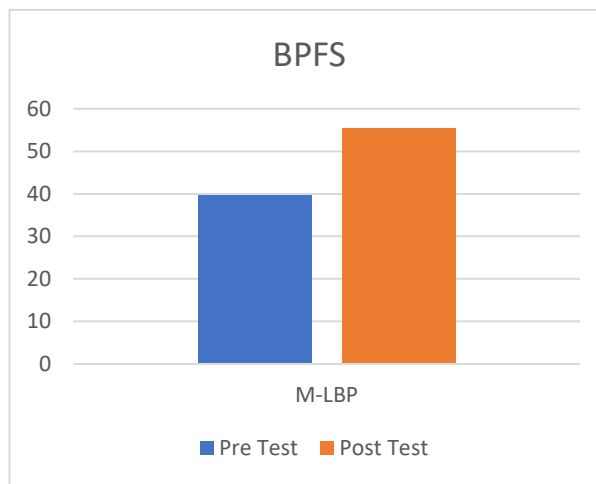
Therapist Position: Walk standing or Comfortable Position

Total Timing: 5 minutes (For a session)

Sessions: 2 time (Morning -1, Evening -1)

Maitland: Grade 5

Method: We should palpate to find out both side Inter-vertebral joints in lumbar region for application. Therapist should make DIP joints, PIP joints flexion, MCP joints extension with abduction of Right hand index finger and middle finger to give maitland grade 5 force on each every Inter-vertebral joints in lumbar region.



IFT:

Patients Position: Relaxed Prone Lying, Both hand place forward & below the forehead with proper billow position

Command: Get relax, Take normal breath

Therapist Position: Walk standing or Comfortable Position

Total Timing: 10 minutes (For a session)

Sessions: 2 time (Morning -1, Evening -1)

DATA ANALYSIS

Back Pain Function Scale (BPFS) Score:

Mean values		Calculated 't' value	Table 't' value	Level of Significance
Pre test	Post test			

39.5	55.5	17.31	1.729 (one-tail)	P < 0.05 Significant
------	------	-------	---------------------	-------------------------

The pretest and post test mean values of BPFC score was analyzed using the paired 't' test. For 14 degrees of freedom and 5% level of significance, the table 't' value is 1.729 and calculated 't' value 39.5. Since the calculated 't' value was greater than table 't' value null hypothesis is rejected.

Result:

This study was conducted on 15 subjects. To find out the functions of back was used BPFS score. BPFS score used was short version. The pretest and post test mean values of BPFS score was analyzed using the paired 't' test. Since the calculated 't' value was greater than table 't' value null hypothesis is rejected. The overall result of this study is zygapophyseal manipulation with IFT to improve functions of back for a period of 5 days.

Discussion:

All subjects are selected from Physiotherapy Department of Swamy Vivekanandha Physiotherapy College, Namakkal. The Outcome measures included the BPFS score to treatment (pretest) and at the end of 5 days of treatment (post test). In this study aim was to find out the effectiveness of giving Zygapophyseal manipulation with IFT to improve functions of back.. The overall effectiveness on BPFS score was analyzed by paired 't' test after 5 days treatment which shows $p < 0.05$ which is significant.

From this study it can be concluded after the Zygapophyseal manipulation with IFT to improve functions of back followed by 5 days in Mechanical Low Back Pain patients.

Conclusion:

The aim of study is found out the effectiveness of giving zygapophyseal manipulation with IFT to improve functions of back in Mechanical Back Pain patients. 25 patients were selected and assessed. Those who had BPFS score between 35 - 45. Out of 20 members 15 subjects were selected. They received the same protocol.

The BPFS score was measured before and after treatment session (5 Days). Pretest and post test values of the study was collected and assessed for significant difference and their results were analyzed by using paired 't' test. This study concluded that Zygapophyseal manipulation with IFT to improve functions of back in Mechanical Low Back Pain patients.

BIBLIOGRAPHY:

1. Allegri M, Montella S, Salici F, Valente A, Marchesini M, Compagnone C, Baciarello M, Manferdini ME, Fanelli G. Mechanisms of low back pain: a guide for diagnosis and therapy. F1000Research. 2016;5
2. Maughan EF, Lewis JS. Outcome measures in chronic low back pain. European Spine Journal. 2010 Sep 1;19(9): 1484-94.
3. Koc M, Bayar B, Bayar K. A comparison of Back pain functional scale with Roland Morris disability questionnaire, Oswestry disability index, and short form 36-health survey. Spine. 2018 Jun 15;43(12):877-82
4. Stratford, P. W. and Binkley, J. M. "A comparison study of the back pain functional scale and Roland Morris Questionnaire. North American Orthopaedic Rehabilitation Research Network." J Rheumatol 2000 27(8): 1928-1936.
5. Valle Calvet M, Olivé Marquès A. Signos de alarma de la lumbalgia. Semin Fund Esp Reumatol. 2010;11(1):24-7.
6. Øverås CK, Johansson MS, de Campos T F, Ferreira ML, Natvig B, Mork PJ, et al. Distribution and prevalence of musculoskeletal pain co-occurring with persistent low back pain: a systematic review. BMC Musculoskelet Disord. 2021;22(1):91.
7. Peck J, Urits I, Peoples S, Foster L, Malla A, Berger AA, et al. A Comprehensive Review of Over the Counter Treatment for Chronic Low Back Pain. Pain Ther. 2021;10(1):69-80.
8. van Tulder M, Furlan A, Bombardier C, Bouter L, Editorial Board of the Cochrane Collaboration Back Review Group. Updated Method Guidelines for Systematic Reviews in the Cochrane Collaboration Back Review Group. Spine. 2003;28(12):1290-9.
9. Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Oage MJ, et al. Cochrane handbook for systematic reviews of interventions. Second edition. Hoboken, NJ: Wiley-Blackwell; 2020. (Cochrane book series).
10. Louw A, Farrell K, Wettach L, Uhl J, Majkowski K, Welding M. Immediate effects of sensory discrimination for chronic low back pain: a case series. N Z J Physiother. 2015;43(2):60-5.

11. Lloyd D, Findlay G, Roberts N, Nurmikko T. Differences in low back pain behavior are reflected in the cerebral response to tactile stimulation of the lower back. *Spine*. 2008;33(12):1372-7.
12. Gill NW, Teyhen DS, Lee IE. Improved contraction of the transversus abdominis immediately following spinal manipulation: a case study using real-time ultrasound imaging. *Man Ther*. 2007;12(3):280-5.
13. Hungerford B, Gilleard W, Hodges P. Evidence of altered lumbopelvic muscle recruitment in the presence of sacroiliac joint pain. *Spine*. 2003;28(14):1593-600.
14. Richardson CA, Snijders CJ, Hides JA, Damen L, Pas MS, Storm J. The relation between the transversus abdominis muscles, sacroiliac joint mechanics, and low back pain. *Spine*. 2002;27(4):399-405
15. Murphy BA, Dawson NJ, Slack JR. Sacroiliac joint manipulation decreases the H-reflex. *Electromyogr Clin Neurophysiol*. 1995;35(2):87-94.
16. Paoloni M, Bernetti A, Fratocchi G, Mangone M, Parrinello L, Cooper M, et al. Kinesio Taping applied to lumbar muscles influences clinical and electromyographic characteristics in chronic low back pain patients. *Eur J Phys Rehabil Med*. 2011;47(2):237-44.
17. Correa JB, Costa LO, de Oliveira NT, Sluka KA, Liebano RE. Effects of the carrier frequency of interferential current on pain modulation in patients with chronic nonspecific low back pain: A protocol of a randomised controlled trial *BMC Musculoskelet Disord*. 2013;14:195
18. Porter S. The intervertebral disc in health and disease: An introduction to back pain Tidy's Physiotherapy. 2003 13 th Oxford Butterworth Heinemann:99–111
19. Ellenberg M, Honet JCO, Young BJ, Young MA, Stiens SA. Low Back Pain Physical Medicine and Rehabilitation Secrets. 2002 2 nd Philadelphia Hanley and Belfus:254–7
20. Bucko CC, Young JL, Cole AJ, Stratton SA, Press JM. Physical therapy options for Lumbar Spine Pain Low Back Pain Handbook A Guide for the Practising Clinician. 2003 2 nd Philadelphia Hanley and Belfus Inc.:151–66
21. Magee DJ Orthopaedic Physical Assessment. 2002 4 th Oxford Elsevier Sciences:467–557
22. Lahad A, Malter AD, Berg AO, Deyo RA. The effectiveness of four interventions for the prevention of low back pain *JAMA*. 1994;272:1286–91
23. GBD 2021 Low Back Pain Collaborators. Global, regional, and national burden of low back pain, 1990-2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *Lancet Rheumatol* 2023; 5: e316-29
24. GBD 2019: Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. <https://vizhub.healthdata.org/gbd-results/>
25. WHO: <https://www.who.int/news-room/fact-sheets/detail/low-back-pain>
26. Balagué F, Mannion AF, Pellisé F, Cedraschi C. Non-specific low back pain. *Lancet*. 2012;379(9814):482-491
27. Casazza BA. Diagnosis and treatment of acute low back pain. *Am Fam Physician*. 2012;85(4):343-350
28. Rubinstein SM, Terwee CB, Assendelft WJ, de Boer MR, van Tulder MW. Spinal manipulative therapy for acute low-back pain. *Cochrane Database Syst Rev*. 2012(9):CD008880.