Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 12, 2352-2357

Effects Of Rigid Taping In Addition To Routine Physical Therapy On Pain, Range Of Motion And Functional Disability In Patients With Sacroiliac Joint Dysfunction

Saddiqa Qamar[1,2], Alishba Mustansar[1], Syed Asadullah Arslan[3], Muhammad Farhan Tabassum[4,5,*], Amtullah Ansari[2], Almina Shafiq[2]

[1]University Institute of Physical Therapy, Faculty of Allied Sciences, University of Lahore, Lahore, Pakistan
[2]University of Management and Technology, School of Health Sciences, Lahore, Pakistan [3]Department of Physical Therapy, University of Health Sciences, Lahore, Pakistan
[4]Departtment of Mathematics, University of Management and Technology, Lahore, Pakistan
[5]Departtment of Sports Sciences and Physical Education, Faculty of Allied Sciences, University of Lahore, Lahore, Pakistan
[*]Corresponding Author: Muhammad Farhan Tabassum, farhanuet12@gmail.com

ABSTRACT

Objectives: To compare the effects of rigid tapping on pain, Range Of Motion (ROM) and functional disability in addition to routine physical therapy in patient with Sacroiliac Joint (SIJ). **Methodology:** This was a Randomized control trail (RCT). Total 94 patients of age from 20-35 years were included in this RCT. For evaluating the effects of rigid taping on sacroiliac joint, patients were divided in to two groups. Group A received routine physiotherapy along with rigid taping whereas group B received just routine physiotherapy for pain, ROM and Lower Extremity Functional Scale (LEFS). Data was collected by using questionnaires including Visual Analog Scale (VAS), Neck Disability Index (NDI) and universal goniometer and recorded at baseline, 6th and 12th sessions. Statistical Package for Social Sciences (SPSS) version 24 was used to analyze the data. **Results:** The comparison of pain intensity by Mann-Whitney Test after treatment at baseline, 6 weeks and 12^{th} week showed that mean and standard deviation of pain score were 4.2128 ± 0.61996, 4.2128 ± 0.57992 and 2.0106 ± 2.0106 respectively, in group A and B. There was no statistically significant difference as $p-value > 0.005$. Similarly, there was no statistical difference in group A and B regarding flexion, extension and axial rotation at baseline, 6^{th} week and 12^{th} week as $p-value > 0.005$. **Conclusions:** This study concluded that application of rigid taping with routine physiotherapy on group A is same as that of group B with routine physiotherapy in improving pain, ROM and LEFS in female with Lower Cross Syndrome (LCS).

Key words: SIJ, Pain, ROM and LEFS.

INTRODUCTION

The sacroiliac joint is a true sub articular joint. Synovial fluid-containing synovial fluid separates and aligns articular surfaces encased in a fibrous capsule. The sacroiliac joint ISG is suspected to be the cause of low back pain (Forst, Wheeler, Fortin, & Vilensky, 2006). There is a discontinuity in the posterior capsule. The articular surfaces are not smooth and have many ridges and depressions that minimize movement

and improve stability. However, the main stability is due to the many adjacent bands (Ebraheim, Mekhail, Wiley, Jackson, & Yeasting, 1997; J. Fortin, Pier, & Falco, 1997). To treat musculoskeletal pain, various taping techniques have been proposed. It is believed that pain relief from therapeutic taping may be due to mechanical and physiological factors due to changes in bone alignment, muscle activity, and joint function (TN & BABU, 2019). However, a recent systematic review showed little or no change in bone alignment, muscle activity, and joint function. There are many reasons for taping, but the taping process often involves stretching, compressing, or shearing the skin and underlying tissue (Bernard, 1991). In fact, only the anterior third of the interface between the sacrum and ilium is an actual synovial joint. The rest of the joint is made up of a complex series of ligamentous connections (Bowen & Cassidy, 1981). Most studies on low back pain focus on the lumbar spine. Occasional studies of SIJ show little evidence of dysfunction or dysfunction. Close relatives appeared to have no evidence of function or dysfunction in these joints, which was interpreted as evidence of lack of function or dysfunction. The functional properties of these joints can be determined by analyzing their structure and movements (DonTigny, 1990). The SI joints axis of motion is complex and primarily determined by the surface pattern of the joint. The transmission and dissipation of mechanical force is the primary function of the integrated SI system. Laboratory diagnostic techniques, a physical exam, and medical history were unable to establish the predictive value of real SI dysfunction (Harrison, Harrison, & Troyanovich, 1997). The SI ligament structure is broader on the dorsal side and serves as a connecting ligament between the sacrum and ilium since the posterior capsule is absent or just partially present (Cohen, 2005). The syndrome of sacroiliac joint dysfunction SIJDS is a well-known factor in low back pain. The differential diagnosis of low back pain and radicular discomfort frequently overlooks the SIJDS. Myofacial pain, fracture, disc-induced pain, hip joint lesion, osteoarthritis, avascular necrosis, joint facet joint pain, ankylosing spondylitis, rheumatoid arthritis, malignant tumour, visceral diffuse pain, uterine endometriosis, radicular disorders, and pyriformis syndrome should all be taken into consideration in the differential diagnosis (Javadov, Ketenci, & Aksoy, 2021). Simple examination techniques, associated pain causes, the biomechanics and function of the sacroiliac joint, dysfunction and pathodynamics of the sacroiliac joint as a common cause of low back pain, treatment and prevention of issues. The physical treatment of sacroiliac asymmetries, lumbar pelvis stability, and muscular imbalance correction are the main areas of attention for physiotherapy (DonTigny, 1985). In addition, SIJD is directly linked to irregularities in leg length and requires sacroiliac training to enhance walking ability of patients (Cho & Yoon, 2015). Twenty percent of those who experience persistent low back pain are thought to have sacroiliac joint SIJ discomfort. SIJ pain is not a consistent or objectively distinguishable diagnosis, which might lead to an exclusionary diagnosis. The recognized procedures and treatment regimens used by SIG to control pain vary and are ineffective or unreliable.

METHODOLOGY

A total of 94 subjects with sacroiliac joint dysfunction diagnosed by detailed orthopedic physical examination and meeting selection criteria were recruited to voluntarily participate in this randomized controlled trial. In this study informed consent was taken from all the patients. Research was approved by ethical Committee of University of Lahore. All the patients were screened according to the inclusion and exclusion criteria. Inclusion criteria was, patients of sacroiliac joint dysfunction and lie in range of 18 to 35 years of age. Subjects who met the inclusion

criteria were assigned to the control and experimental groups. Subjects were selected from the outpatient department of the Department of Physical Therapy at Jinnah Hospital Lahore. Subjects were randomly divided into two equal groups. The study was single blinded. The assessor was unaware of treatment given to both groups. Subjects were randomized into two groups using computer generated random numbers. Data was collected at baseline, 6th and 12th sessions. Data was collected by using questionnaire including VAS, NDI and universal goniometer. The selected participants were randomly divided into two groups of 47 patients each group. The experimental group received routine physiotherapy along with rigid kinesio tapping and control group received only routine physiotherapy for SIJD. Routine physiotherapy consisted of lower limb strengthening exercises along with TENS and heat. Stretching drills for the pelvic and abdominal muscles. Postural instruction and mobilization of the sacroiliac joint. Heat was applied for ten minutes before the session followed by exercises which consisted of three sets of ten repetitions. Rigid taping was used to 47 individuals in the experimental group in addition to their usual physiotherapy sessions. All subjects in the experimental group had the exact same taping process. They were positioned side-lying on the side that was not injured, with the hip joints that were injured flexed at a 45-degree angle and the femur supported in a 20-degree natural rotation. Every therapy lasted about 30 to 45 minutes, 3 days per week, every other day, for 4 weeks 12 sessions, with a 1-month follow-up, was the treatment regimen

RESULTS

The tests of normality like Kolmogorov-Smirnova and Shapiro-Wilk test was applied to the data and showed that the data was not normally distributed, therefore, the data is non-parametric. The results regarding descriptive statistics of age showed that mean and standard deviation found to be 29.225 ± 3.254 for Group A rigid tapping with routine physiotherapy and 29.225 ± 3.281 for Group B routine physiotherapy. Regarding gender of participant showed that there were 42. 6 percent were males whereas females were 57. 4 percent in group A and 40. 4% males and 59. 6 % females in group B. The comparison of pain intensity by Mann-Whitney Test after treatment at baseline, 6th week and 12th week showed that mean and standard deviation of pain score were found to be 4.212 ± 8.61996, 4.212 ± 8.57992 and 2.0106 ± 2.0106 in group A and B. while there was no statistically significant difference as p value > 0.005 between both groups (Table 1). The results regarding comparison of flexion, extension and axial rotation by Mann-Whitney test suggested that there was no statistically significant difference, as p value was > 0.005 (Table2).

Table 1 Mann-Whitney test between Group A and Group B Pain comparison at baseline, 6 weeks and 12 weeks

	Groups	N	Mean Rank	SD	Mean	P value
Pain baseline	taping with routine PT	47	39.41	.61996	4.2128	.01
	routine PT	47	55.59			
	Total	94				
Pain 6weeks	taping with routine PT	47	38.32	.57992	4.2128	.01
	routine PT	47	56.68			
	Total	94				
Pain 12weeks	taping with routine PT	47	33.44	.63066	2.0106	.01
	routine PT	47	61.56			

	Total	94

PT=Physical Therapy

Table 2 Mann-Whitney test between Group A and Group B Flexion comparison at baseline, 6 weeks and 12 weeks

	Patients	N	Mean R	SD	Mean	P Value
Flexion Baseline	taping with routine PT	47	47.50			
	routine PT	47	47.50	.00000	.0000	1.000
	Total	94				
Flexion 6week	taping with routine PT	47	53.00			
	routine PT	47	42.00	.49535	.4149	0.2
	Total	94				
Flexion 12week	taping with routine PT	47	53.00			
	routine PT	47	42.00	.49535	1.4149	0.2
	Total	94				

DISCUSSION

Sacroiliac joint pain is believed to be a component of low back pain in 20% of people suffering chronically. In this study, SIJ's mostly seen in females. The purpose of this narrative review is to explain and discuss non-surgical treatment options for patients with SIJ pain. In addition, treatment options and course adjustments are provided (J. D. Fortin, 1993) In this study kinesio rigid tapping along with conventional physiotherapy was compared to conventional therapy and results suggest that there is no significant difference between two groups.

The use of manual vs mechanical force manipulation in the treatment of sacroiliac joint syndrome was the subject of a separate investigation. Christopher J. Colloca DC and Kirsten A. Shearar Mtech. to find out how well traditional manual chiropractic adjustments work vs instrument-delivered chiropractic adjustments for treating sacroiliac joint disease The findings suggest that a brief course of high speed, low amplitude mechanical force, manual help, or chiropractic management is related with favorable benefits of pain relief (Visser et al., 2013) whereas this study results suggests that there are same results regarding pain, flexion, extension and axial rotation improvement with and without rigid tapping.

According to a 2021 randomized controlled research by Hayri Baran Yosmaoglu, the use of therapeutic elastic bands and stiffeners affects pain, function, and tissue temperature in people with lumbago. To evaluate the therapeutic benefits of various dressing approaches and materials on low back musculoskeletal illness patients' levels of pain, function, and tissue temperature. There was no difference between placebo and hard percussion bands, however elastic bandages were more effective than placebo bandages at reducing discomfort and improving function. Similarly, our study suggested that there is no difference in prognosis of SIJD with or without rigid tapping.

By rigid taping receiving patients pain decrease and range of sacroiliac joint increase which were flexion, extension and axial rotation, also functional ability enhances which calculated by ODI and pain with visual analogue scale for pain assessment. But with routine physiotherapy its results were better than those patients who received only routine physiotherapy.in recent research Physical therapy (PT) interventions used

to manage SIJs include repetitive exercises, manual joint mobilization, manipulation, braces, massage, patient education, aerobic conditioning, exercise therapy, and electrotherapy modalities. 26 Current SIJD. This case illustrates the effectiveness of combined physiotherapy interventions in the conservative treatment of sacroiliac joint dysfunction (Ojeniweh, 2022). In contrast this study does not support any benefits regarding use of kinesio rigid tapping.

Group of muscles which were effected by sacroiliac joint dysfunction and back muscles which included erector spinea, quadratus lumborum and multifidus lumborum explained by Neamat Allah N, Sigward S(2019) (Neamat Allah, Sigward, Mohamed, Elhafez, & Emran, 2019). In current study routine physiotherapy, all stretching exercise and strengthening exercise were performed on these muscles to enhance the joint movements. By these exercises with rigid taping showed same results as that of routine physiotherapy. These muscles provide the stability to the sacroiliac joint. After treatment we have seen that significant decrease in pain , increase in range of motion which calculated by goniometer and functional disability which measure by scale in patients with SIJD (Neamat Allah et al., 2019).

The stabilization exercises, which are superior to other treatments like traditional care and education but do not include traditional physical therapy, can lessen pain and impairment caused by low back pain. However, the current study employed standard physiotherapy on SIJ patients, yet rigorous taping produced same outcomes. There is evidence that stabilization exercises are beneficial for individuals with sacroiliac joint dysfunction in addition to the widespread agreement on their impact on patients with persistent low back pain. Additionally, Monticone et al. came to the conclusion that stability exercises work better for treating sacroiliac joint pain than laser therapy (Kamali, Zamanlou, Ghanbari, Alipour, & Bervis, 2019). Similarly, our study strongly recommend stabilization exercises as there was no difference in improvement with or without rigid tapping.

CONCLUSIONS

On the sacroiliac joint, rigid taping and regular physiotherapy is as effective as regular physiotherapy. This revealed that stiff tapping could have an impact on sacroiliac joint dysfunction but patient's range of pain motion, which comprised extension, flexion, and axial rotation were not significantly improved as compared to without tapping physiotherapy. Regular physical treatment had positive effects on pain, range of motion, and functional impairment in individuals with sacroiliac joint dysfunction.

REFERENCES

1. Bernard, P. (1991). Cassidy JD. The sacroiliac joint syndrome-pathophysiology, diagnosis and management. The Adult Spine: Principles & Practice. New York, NY: Raven, 2107-2130.
2. Bowen, V., & Cassidy, J. D. (1981). Macroscopic and microscopic anatomy of the sacroiliac joint from embryonic life until the eighth decade. Spine, 6(6), 620-628.
3. Cho, B.-Y., & Yoon, J.-G. (2015). The effect of gait training with shoe inserts on the improvement of pain and gait in sacroiliac joint patients. Journal of physical therapy science, 27(8), 2469-2471.
4. Cohen, S. P. (2005). Sacroiliac joint pain: a comprehensive review of anatomy, diagnosis, and treatment. Anesthesia & Analgesia, 101(5), 1440-1453.
5. DonTigny, R. L. (1985). Function and pathomechanics of the sacroiliac joint: a review. Physical therapy, 65(1), 35-44.

6. DonTigny, R. L. (1990). Anterior dysfunction of the sacroiliac joint as a major factor in the etiology of idiopathic low back pain syndrome. Physical therapy, 70(4), 250-262.
7. Ebraheim, N. A., Mekhail, A. O., Wiley, W. F., Jackson, W. T., & Yeasting, R. A. (1997). Radiology of the sacroiliac joint. Spine, 22(8), 869-876.
8. Forst, S. L., Wheeler, M., Fortin, J. D., & Vilensky, J. A. (2006). The sacroiliac joint: anatomy, physiology and clinical significance. Pain physician, 9(1), 61.
9. Fortin, J., Pier, J., & Falco, F. (1997). Sacroiliac joint injection: pain referral mapping and arthrographic findings. Movement, stability and low back pain, the essential role of the pelvis. New York: Churchill Livingstone, 271-285.
10. Fortin, J. D. (1993). Sacroiliac joint dysfunction. Journal of back and musculoskeletal rehabilitation, 3(3), 31-43.
11. Harrison, D. E., Harrison, D. D., & Troyanovich, S. J. (1997). The sacroiliac joint: a review of anatomy and biomechanics with clinical implications. Journal of Manipulative and Physiological Therapeutics, 20(9), 607-617.
12. Javadov, A., Ketenci, A., & Aksoy, C. (2021). The efficiency of manual therapy and sacroiliac and lumbar exercises in patients with sacroiliac joint dysfunction syndrome. Pain physician, 24(3), 223.
13. Kamali, F., Zamanlou, M., Ghanbari, A., Alipour, A., & Bervis, S. (2019). Comparison of manipulation and stabilization exercises in patients with sacroiliac joint dysfunction patients: a randomized clinical trial. Journal of bodywork and movement therapies, 23(1), 177-182.
14. Neamat Allah, N., Sigward, S., Mohamed, G., Elhafez, S., & Emran, I. (2019). Effect of repeated application of rigid tape on pain and mobility deficits associated with sacroiliac joint dysfunction. Journal of back and musculoskeletal rehabilitation, 32(3), 487-496.
15. Ojeniweh, O. (2022). Effectiveness of combined physiotherapy interventions as a conservative treatment for sacroiliac joint dysfunction pain: a case report. International Academic Journal of Medical and Clinical Practice, 7(2), 15-22.
16. TN, S., & BABU, P. S. (2019). COMPARING THE EFFECT OF KINESIO TAPING VERSUS MANUAL TRIGGER RELEASE ON THENAR EMINENCE PAIN IN PROFESSIONAL PALESTRATO. Int J Pharma Bio Sci, 10(3), 165-170.
17. Visser, L., Woudenberg, N., De Bont, J., van Eijs, F., Verwer, K., Jenniskens, H., & Den Oudsten, B. (2013). Treatment of the sacroiliac joint in patients with leg pain: a randomized-controlled trial. European Spine Journal, 22(10), 2310-2317.