

COMPARISON OF EFFECTIVENESS OF EXERCISE THERAPY VERSUS TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION IN PAIN MANAGEMENT FOR NON-SPECIFIC LOW BACK PAIN

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Abstract:

Objectives: Examine effects of Exercise therapy and transcutaneous electrical nerve stimulation solo and mutually for treating pain due to NSLBP

Methods: 90 patients of age 20-40 years with Non-Specific LBP were randomized into three groups. In first group (1) Transcutaneous Electrical Nerve Stimulation was given and in second group (2) only exercises were given and in third group (3) Both TENS and exercises were given each group included 30 patients. Comparisons among both groups were conducted for variations in pain score and significance difference.

Results: Out of 90 subjects. Group having combination of both the treatments shown visible effects in decreasing pain (VAS $p < 0.05$) as compare to other treatment groups whereas after this group TENS group ranked second in effectiveness and lastly exercise therapy is effective which shows that transcutaneous electrical nerve stimulation plus exercise therapy taken together was more effective in managing non-specific low back pain.

Conclusion: Owing to the statistical significance difference in current study, and view of sample power due to large number of patients in each group, the results lead to positive conclusion. Therefore, it can be concluded that transcutaneous electrical nerve stimulation plus exercise therapy taken together is more effective. In addition, transcutaneous electrical nerve stimulation used solo and exercise therapy used solo is not as effective as compare to both the treatments taken together as a treatment protocol.

Keywords: Non-specific low back pain, low back pain, TENS, exercise, physical therapy, musculoskeletal pain, rehabilitation.

INTRODUCTION:

Low back pain (LBP) is a core issue of health (Wand and O'Connell, 2008). Majority of the people experience it in their life. The term LBP is described as pain which is felt between twelfth rib and gluteal area with and without lower limb pain varies by different causes (Norasteh, 2012). These symptoms can develop in all age groups, social groups and occupations of the world. These symptoms can persist from 2 to 3 months and reoccurrences in 80% to 90% of the patients (Yang et al., 2015). Back pain and its associated disability improve within weeks. Prognosis of acute LBP is favorable (Pengel, 2003). About 90% people suffer from LBP in their adulthood (Nagasu et al., 2016). Risk

factors associated with back pain are of physical nature like, unusual weight lifting, obesity, twisting, bending, and vibration. Personal and work related factors are also including in it (Randolph, 2016). Two types of LBP are specific and Non-Specific LBP. Back pain without underlying serious pathology is Non-Specific and pain that is associated with known pathophysiology is specific LBP (Schnurrer, 2011).

Evidence on review of management for subjects needs care for LBP and patients diagnosed with Non-Specific LBP. In acute

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Non-Specific LBP i-e 0-4 weeks, there is strong evidence that self-care, manipulative therapy and remain active is effective treatment for back pain. In sub-acute Non-Specific LBP i-e 4-12 weeks, there is adequate evidence that exercises therapy with cognitive behavioral is more useful than usual treatment. These types of treatment sessions reduce absenteeism from work. In chronic Non-Specific LBP i-e more than 12 week, various managements are present with partial efficacy on pain and disability level. There is very little suggestion about surgical procedure in chronic Non-Specific LBP (Nordin et al., 2006).

While connecting the pain evaluation after and before treatments session this study concluded that TENS is relatively effectual in reducing pain intensity as well as creates additive effects in repetitive treatments which consequences that TENS is effective for sensory and motivational effects together in short term but not exclusively efficient in long term nonspecific low back pain treatment (Marchand et al., 1993).

Designed programs of exercise therapy comprising stretching and strengthening exercises brought pain in supervision and roles in chronic nonspecific low back pain. Approaches must be used to reassure observance and evaluates patient specific level and exercise types (Hayden et al., 2005).

Exercise therapy is advantageous in drooping the pain and correcting the activity of daily life in subjects with NSLBP (Hayden et al., 2005). Different exercises are used to treat LBP.

The objective of this study is to find the effects of transcutaneous electrical nerve stimulation and exercise therapy in treating low back pain with non-specific cause NSLBP.

SUBJECTS AND METHODS:

This randomized control trial has been conducted in the department of physiotherapy at district headquarters hospital Faisalabad over a period of six months. Before collecting the data, all information about the study to the patient was provided. Each patient signed the informed consent forms and the privacy of patients taken into consideration. Patients of 20 to 40 ages were enrolled in the study if

they were diagnosed as Non-Specific LBP. Study included 90 patients were met the inclusion criteria with equal gender distribution. Demographic data such as name, age, gender, address, contact no. and date were documented. Three groups were made, in first group (1) Transcutaneous electrical nerve stimulation were given with dosage of pulse width 190 micro seconds, pulse rate 45 Hz with modulation mode and in second group (2) Stretching/strengthening exercises were given and in third group (3) both interventions were given. Each group included 30 patients. Before starting the session hot pack was given for 10 minutes at the low back for superficial heat. Alternative sessions of treatment were given for 2 weeks. All exercises were performed for 10 repetitions and same exercise performed by patient at home. Patients were not allowed to take any pain killer, muscle relaxant medicines, any injection or massage therapy. All patients were treated with same TENS device TPN 200 plus.

In group (1) patient lay down on treatment table in comfortable position then placements of electrodes were accustomed and its dosage were set and intensity given accordingly.

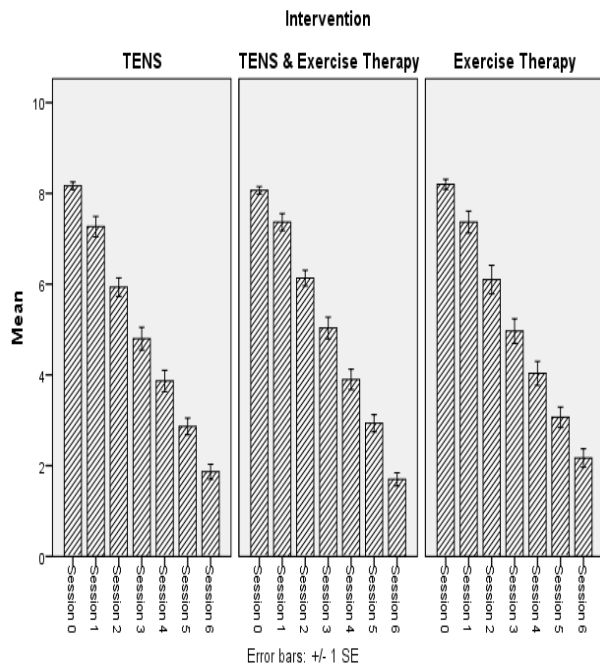
TENS parameters included in this study are:

TENS	TPN 200 plus
Treatment mode	Modulation
Pulse width	190 micro sec
Pulse rate	45 Hz
Treatment duration	20 minutes
Treatment frequency	Alternative days for two weeks
Patient position	Prone position

The pain score was measured by pain measurement tool such as visual analogue scale (VAS) and disability level was measured by another tool such as modified Oswestry Disability Index (ODI). Pain intensity was measured before the treatment, after every third session and before the discharge. Disability level was measured before the treatment, after one week then at the termination of treatment.

RESULTS:

The total number of patients was 90 of Non-Specific LBP. They were divided into 3 groups of 30 patients in each group. One group was treated with TENS group and the other by Exercise group therapy and third with combination of both.



The VAS after each treatment session in all treatments groups showing non-significant difference as shown in graph.

“ANOVA”

Treatments	N	Mean	Standard Deviation	Standard Error
TENS	30	19.3 a	7.9	1.4
TENS & Exercise Therapy	30	10.5 b	6.7	1.2
Exercise Therapy	30	19.2 a	9.4	1.7

In mean values lesser the mean value efficient the treatment. Hence TENS and

Exercise therapy with the mean value 10.5 proved to be most efficient as compare to rest of treatments.

DISCUSSION:

The design and conduct of this trial, tried to avoid various flaws about the use of TENS and exercise in published studies.

Participants aged between 20 to 40 years were included in this study. Total 90 patients were meeting the inclusion criteria. Meanwhile patients were randomly separated into 3 groups.

After completion of treatment 63% in TENS 96.6% TENS & ET and 36.6% in Exercise Therapy job and homemaking becomes normal did not disturb anymore with pain. As pain intensity 100% relieved in TENS & exercise therapy 83% in TENS alone and 73% in exercise alone as well as other parameters of Oswestry.

Balagué et al., (2012) reported that Non-Specific LBP is the major issue of health. In the present study patients of Non-Specific LBP was included because only 5% to 10% of patients present with any specific cause of back pain. Near about 90% of patients diagnosed as Non-Specific LBP (Krismer and van Tulder, 2007).

TENS a placebo effect determined that low intensity and high intensity transcutaneous electrical nerve stimulation broadly used in NSLBP management, In there study they used visual analog scale before and after treatment for evaluating the distinct features of low back pain treatment i.e.; sensory and motivational effects on patients. While connecting the pain evaluation after and before treatments session this study concluded that TENS is relatively effectual in reducing pain intensity as well as creates additive effects in repetitive treatments which consequences that TENS is effective for sensory and motivational effects together in short term but not exclusively efficient in long term nonspecific low back pain treatment (Marchand et al., 1993) Effectiveness of types ET having acute and lingering LBP is still debated. Conversely exercise therapy is possibly the supreme used conservative management all over the world (Lizier et al., 2012).

Designed programs of exercise therapy comprising stretching and strengthening exercises brought pain in supervision and roles in chronic nonspecific low back pain. Approaches must be used to reassure observance and evaluates patient specific level and exercise types (Hayden et al., 2005).


CONCLUSION:

Owing to the statistical significance difference in present study, and view of sample power due to large number of patients in each group, the results lead to positive conclusion. Therefore, it can be concluded that combination of transcutaneous electrical nerve stimulation & Exercise therapy seems to be more effective. In addition, it can also be determined that Transcutaneous electrical nerve stimulation and exercise therapy if used solo outcomes were not much more effective as TENS & Exercise together shown.

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