Compare the Effectiveness of Soft Tissue Mobilization and TENS with Stretching Exercises and TENS for Low Back Pain among Online Motorbike Delivery Workers

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Abstract

Background: The majority of the time that drivers are at work is spent seated this causes low back pain in motorbike riders, motor bike riders were more likely to have Low Back Pain. The workload of each workers different, according to the type of work. Workloads can be mental, physical and social.

Purpose: To compare the effectiveness of soft tissue mobilization and TENS with stretching exercises and TENS for low back pain among online motorbike delivery workers.

Materials and Methods: Total of 60 subjects were selected based on the inclusion and exclusion criteria. The detailed procedure of the study was explained to the subjects, and the informed consent form was collected. The subjects were chosen from A.K.B Physiotherapy and Rehabilitation centre. The pre and post test values were measured using the numerical pain rating scale and low back pain rating scale. The subject were allocated in to two groups soft tissue mobilization and TENS group and stretching exercises and TENS group. The study duration was 4 weeks. study period: october 2022-june 2023.

Result: Statistical analysis of post test result revealed that both the group show similar results but soft tissue mobilization and TENS exceeds the Stretching exercises and TENS statistically with a p value of<0.0001 .

Conclusion: Soft tissue mobilization and TENS is more effective than stretching exercises and TENS in reducing low back pain among online motorbike delivery workers.

Keywords: Soft tissue mobilization, stretching exercises, TENS, low back pain NPRS, low back pain rating scale, online motorbike delivery workers.

Introduction

The majority of people will at some point in their lives have low back discomfort, which is a very common ailment. Depending on socioeconomic position, occupational distribution, pain perception, and other factors, the effects and outcomes of low back pain are anticipated to differ greatly within and within groups¹ Acute traumatic pain is frequently accompanied by strong muscular spasms around the damaged structures. It is frequently considered
in clinical practice that similar responses follow non-traumatic pain. The economic impact of LBP on society is primarily due to the significant number of lost working days (indirect expenses), and less so because of the high cost of direct medical care. There is a significant percentage of people with persistent LBP. The majority of these illnesses are caused by a variety of mechanical causes, although other underlying pathologic pathways play a significant role. In online transportation service work the most popular sport in the world is cycling, but bikers can sustain a wide range of motion. The majority of chronic LBP problems lack any anatomical or radiological abnormality that may be seen. It is challenging to define a precise exposure-response link between Whole body vibration exposure and low back diseases due to the numerous potential causes of low back pain. The effectiveness of massage treatment in treating low back pain is not backed by any research. The thorough massage therapy can help relieve acute low back discomfort. (soft-tissue manipulation, corrective exercise, and posture education), two components of massage therapy, and placebo. To create a safe stretching program, follow these guidelines: warm up lightly before stretching exercises; use static stretching; stretch before and after a workout; start with mild exercises and progress to moderate ones; alternate exercises for different muscle groups; stretch slowly and gently until tightness rather than pain is felt. Stretching out greatly expands range of motion, but it also tends to make muscles more rigid and passive tense. There are three types of stretching: static, dynamic, and proprioceptive neuromuscular facilitation (PNF). The opposing muscle is normally contracted first, followed by an isometric contraction of the target muscle. The evidence regarding TENS effectiveness is contradictory and has to be described as well as analyzed. Emerging population-specific systematic reviews and meta-analyses reveal that both HF and LF TENS can relieve pain, especially when used at a strong, painless intensity. Many treatments are frequently prescribed for persistent back pain, but only a small number have undergone thorough analysis.

**Aim**

To compare the effectiveness of soft tissue mobilization and TENS with stretching exercises and TENS for low back pain among online motorbike delivery workers.

**Methods and Materials**

Total of 60 subjects were selected based on the inclusion and exclusion criteria. The detailed procedure for performing the study was explained to the subjects, and the informed consent form was collected from them before starting the study. The pre and post test values were measured with the help of the low back pain rating scale and the numerical pain rating scale (NPRS). The subjects were split into two groups according to the inclusion and exclusion criteria: soft tissue mobilization and TENS (n=30). The subject received soft tissue mobilization and TENS with frequency (50-100Hz for 30 minutes) for 3 sessions per week and continued for 4 weeks.

Stretching exercises with TENS (n=30) were given TENS with frequency (50-100Hz for 30 minutes) and stretching exercises for 3 days a week, and it was continued for 4 weeks. For each session, 3 sets and 10 repetitions were given.

**Inclusion Criteria:**

1. Both men and women
2. Age between 18-45 years
3. NPRS score between 5 to 10
4. Motor bike delivery workers
5. Subjects willing to participate in the study.

**Exclusion criteria:**

1. Subjects with severe trauma
2. Congenital disorder of spine
3. Patient with neurological deficit
4. Spinal surgery
5. Cervical radiculopathy
6. Tumor and shoulder disease

**Outcome Measures**

**Numeric Pain Rating Scale [NPRS]**: This scale has been determined to be one of the most accurate pain outcome measures available. This scale starts at 0 and ends at 10 based on the pain severity.

**Low Back Pain Rating Scale**: This scale has values from 0 to 4 which indicates the pain intensity while doing daily activities.

**Procedure**

The inclusion and exclusion criteria were used to choose a total of 60 subjects. The detailed procedure...
for performing the study was explained to the subjects, and the informed consent form was collected from them before starting the study. The pre and post test values were measured using the numerical pain rating scale (NPRS) and low back pain rating scale. The subject willing to participate were randomly allocated in to two groups soft tissue mobilization and TENS group and stretching exercises and TENS group.

**Soft tissue mobilization and TENS group:**

The subject was mobilized in the low back region using techniques like deep tissue massage and effleurage on muscles like the quadratus lumborum, gluteus muscle, and piriformis. The patient was in the prone position, and the therapist should have been standing to the side. Deep strokes and massage were given for 30 minutes, with 20 strokes given every two minutes. With this TENS with frequency 50-100 Hz for 30 minutes in prone position for low back area was given.

**Stretching exercises and TENS group:**

The subjects treated with stretching exercises were given with TENS with frequency 50-100 Hz for 30 minutes in prone position for low back area was given.

**Child’s pose:**

The individual is instructed to keep their hands and knees on the ground and to reposition their hips such that they are resting on their heels. Next they walk their hands out in front as their hips fold inward and hinge. They place their belly against their thighs. palms facing down, extend arms out in front of or next to their body. They concentrate on inhaling deeply and relaxing any stiff or tense muscles. Up to a minute, they maintain this posture.

**Knee to chest stretch:**

The test subjects should lie on their backs, their feet flat on the ground, and their knees bent in both directions. Lengthen the left knee out straight or keep it bent. Holding hands behind the thigh or at the top of the shinbone, they clasp their hands together, and keep their hips from raising. Draw their right knee into their chest. They hold this position for 30 seconds to 1 minute while taking a deep breath to let go of any tension. Continue with the opposite leg.

**Seated spinal twist:**

Asking the subject to Lie down on the floor and extend both of their legs in front of you. Their left knee is bent, and they position their foot outside of their right thigh. Their left thigh’s outside is where their right arm should be placed. Putting their left hand behind for stability. Turn to the left side, starting at the base of their spine. Stay in this position for up to one minute. Continue on the opposite side.

**Cat and cow:**

The subjects were positioned on all fours with their hands and knees on the ground in a tabletop configuration. Inhaling to look up, they press into their hands and feet, allowing their belly to fill with air. Exhale while tucking their chin into their chest and arching their back upward. Continue moving in this manner, moving with each breath. Spend one to two minutes doing this.

**Cobra stretch:**

They were instructed to lay on their stomachs with their hands extended in front and palms facing down, elbows tucked under their shoulders. Separate their feet just a little bit. Lift the head and chest gently. Maintain your core and lower back strength while taking deep breaths. Gently close their eyes while pressing their pelvis onto the floor. Hold this position for between 30 and 60 seconds.

**Data Analysis**

![Graph 1: comparison of pre and post test values of soft tissue mobilization and tens group.](image)
Interpretation: Graph -1 shows that the values are extremely statistically significant.

Interpretation: Graph -2 shows that the values are extremely statistically significant.

Interpretation: Graph -3 shows that the values are extremely statistically significant.

Result

The comparison between post test values of soft tissue mobilization and TENS, using NPRS is 17.80(+4.56) and the post test values of stretching exercise and TENS using NPRS is 10.27(+3.24), and post test values of soft tissue mobilization and TENS, using low back pain rating scale is 5.67(+1.45) and the post test values of stretching exercise and TENS using low back pain rating scale is 2.67(+1.18).The results are statistically significant with p value of < 0.0001.

Statistical analysis of post test result revealed that both the group show similar results but soft tissue mobilization and TENS exceeds the Stretching exercises and TENS statistically with a p value of<0.0001.

Discussion

The goal of the present study is to compare the effectiveness of soft tissue mobilization and TENS with stretching exercises and TENS for low back pain among online motorbike delivery workers. The comparison is demonstrated for 4 weeks and outcome results were measured using NPRS and low back pain rating scale .when the response where compared they show significant difference between the two groups. soft tissue mobilization and TENS shows greater effect than stretching exercises and TENS

In soft tissue mobilization and TENS group pre-intervention mean of low back pain rating scale was 22.60(+4.73) and NPRS was 7.53(+1.60).After treating the subject, the mean value of low back pain rating scale and NPRS is decreased to 17.80(+4.56) and 5.67(+1.45), which shows difference between the groups that is statistically significant. In stretching exercises and TENS group pre-intervention mean of low back pain rating scale was 21.07 (+4.89) and NPRS was 7.53(+1.60).After treating the subject the mean value of NDI and NPRS is decreased to 10.27(+3.24) and 2.67(+1.18), which shows statistically significant difference between the groups.

Based on the statistical analysis, both groups showed improvement. The subject treated with soft tissue mobilization and TENS showed better improvement in low back pain rating scale and Numerical pain rating scale than the subjects in stretching exercises and TENS group.

An early study by Rachmat N(2020) has concluded that Low back pain is common in motorcyclists. Age, time spent riding per day and position change
were the factors found considerably higher among motorcyclist students suffering from low back pain\textsuperscript{19}.

An early study by Roshani Gautam (2023) has concluded that it is recommended that there should be some government regulations for the working hours and other safety measures for the ride sharing company\textsuperscript{20}.

**Conclusion**

According to the study both soft tissue mobilization with TENS and stretching exercises with TENS reduces the low back pain in online motorbike delivery workers. The finding suggests that soft tissue mobilization with TENS is more beneficial and lowers the low back pain in online motorbike delivery workers.

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**Conflict of Interest:** Nil

**ISRB approval:** This research work has been approved by ISRB committee.

**Reference**


