Comparative study of stretching versus strengthening exercise for anterior shin splint

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ABSTRACT

Aim: This study aims to demonstrate that stretching exercises in the anterior jaw splint are more effective than strengthening exercise.

Objective: The goal of this research is to see how stretching and strengthening exercises affect athletes.

Methodology:20 subjects based on addition and exclusion criteria, study system: Individual of SCPT. Materials: mat, towel, steps. Sample technique: Random control technique. Study

Design: Pilot Study. Sample mode: Convenient model: Outcome measures: NPRS, MTSS (intermediate tibial pressure syndrome level). The intervention was given for 4 weeks, 5 days / week. The NPRS and MTSS baseline analysis was performed before the intervention began. Lessons were given at 4 weeks of intervention, followed by a follow-up test to investigate the long-term effects of the intervention. Because the difference between post-test I and post-test II was considerable, the results were delayed.when the SD values were compared.

Conclusion: Therefore, it has been concluded that stretching exercises are more effective than strengthening exercise in reducing the NPRS and MTSS of athletes.

Keywords: Anterior shin splint, Medial tibial stress syndrome, Stretching, Strengthening, NPRS, MTSS

INTRODUCTION:

Overuse or repetitive-stress injury of the shin is known to as Medial tibial stress syndrome (MTSS). When the body is unable to repair effectively as a result of muscle contractions that are repeated, various stress reactions of the tibia and surrounding musculature occur. Shin splints are a painful condition that might cause you to miss out on your workouts. Shin splints are a type of lower limb pain that can affect the front, outside, or inside of the leg. Often, the discomfort begins as soon as the activity begins, improves gradually as the session continues, and then worsens once the exercise is completed[6, 2].

Shin splints affect a wide range of people, including military personnel, dancers, and runners, and they most usually occur when training regimens are disrupted and the bones, tendons, and muscles are stressed [2]. Shin splints are thought to be responsible for 10.7% of male runners' injuries and 16.8% of female runners' problems. Aerobic dancers are among the worst impacted, with up to 22% of them complaining from shin splints. Shin splints account for 10 to 15percentage of all running injuries (Gudas, 1980; James et al, 1978) and up to 60% of all lesions causing leg ache in athletics (Gudas, 1980; James et al, 1978). (Gudas, 1980; James et al, 1978).James et al., 1978; Gudas, 1980), (1979, Orava and Puranen). In the sole prospective study on the disease, Andrish et al (1974) discovered a 4.07 percent incidence of shin splints after nearly 2,000 recruits had basic physical education training. Shin splints are commonly associated with repetitive motions that stress the shinbone and the connective tissue that links the muscle to the bone. Over pronation is also thought to play a role in foot and ankle growth.

Various authors have used different terminologies to describe chronic shin discomfort in athletes. Among them are: Medial tibial syndrome (MTS) is a condition that affects the lower leg. Medial tibial stress syndromes is a condition that occurs when the medial tibia is stressed. Shin ailment, Compartment syndrome in the anterior region of the body,Posteriomedial compartment syndrome is a type of compartment syndrome that affects the backside of the body[6] A static stretching regimen can aid in the rehabilitation of athletes with medial tibial stress syndrome (MTSS) as well as the prevention of the condition in athletes who do not have it (MTSS). The hamstrings, gastrocnemius, and soleus muscles should all be emphasised. Static stretching has been demonstrated to trigger a plastic reaction, resulting in tissue elongation that is

irreversible. These stretches, when used as part of strength and conditioning programme, can help athletes with medial tibial stress syndrome (MTSS) get back on their feet and work as a safety precaution[12].

MATERIAL AND METHODS:

Pilot study was the study's design. Individuals in the physiotherapy department, SMCH Method of sampling: simple sampling; A total of 20 samples were used to create this study. Criteria for entry: Pain on the tibia's postero-medial edge, pain generated by exercise and present during or after exercise >20 years old, at least once a week active in sports Tibial fracture in the past, history of paresthesia, chronic exertional compartment syndrome, etc. are all exclusion criteria. The NPRS (Numeric Pain Rating Scale) and the MTSS (Measurement of Treatment Success) are two outcome measures (medial tibial stress syndrome scale).

PROCEDURE:

20 people were chosen based on specific criteria. The participants' consent was acquired. The study's risk factors, safety, and method were all explained to the participants. The participants were chosen at random. The subjects are separated into two categories: experimental (n=10) and control (n=10).

Stretching exercises were given to the experimental group; the exercises are Kneeling shin stretch

Seated shin stretch, Gastrocnemius calf stretch, Soleus calf stretch, Tibialis anterior muscle stretch, Achilles tendon standing stretch, Towel stretch. Strengthening exercises were given to the control group; the exercises are Soleus squat, Single leg soleus bridge, Side lying leg lift, Calf strengthening. Session of Treatment: One session every day, five days a week, for four weeks.

The MTSS and NPRS are used as a pre-test before starting the treatment session. The patient was requested to sit for a few minutes while the procedure was explained to patients, after following the treatment procedure for four weeks, the therapist performed the exercises on the patient, and the outcomes were measured using the identical MTSS and NPRS pre-test and post-test protocols.

STATISTICAL ANALYSIS:

Using descriptive and inferential statistics, the acquired data was tabulated and evaluated. The mean and SD were applied to all parameters. The significant differences between pre-test and post-test measures were analysed using a student t-test. An independent t-test was used to look for significant differences between the two groups.

RESULT:

To analyse the data, descriptive and interferential statistics were used. As a result, the parameters mean and SD were employed in a student t test to look for major differences among the pretest and posttest measurements. A statistically significant difference between Groups

was discovered by analysing quantitative data. Group A and B, as well as within each group. The Post-test mean value in Group A NPRS was 2.90(+0.99) MTSS was 2.80(+0.79) and in group B NPRS was6.80 (+0.79) MTSS was 6.10(+1.20). This analyses P = 0.0001 showed that group B's NPRS and MTSS scores were lower than group A's. The statistic data analysis of the post-test for the NPRS and MTSS is an statistically significant difference between groups A and B. As a result, Group A has a significant statistical advantage versus Group B.

DISCUSSION:

The goal of this research was to compare stretching and strengthening exercises for the anterior shin split. The intervention occurred over a four-week period. Both groups completed the supervised exercises, which resulted in lower NPRS and MTSS in both. However, when the results were compared, it was discovered that the stretching exercises results in a major improvement in the individuals. The NPRS and MTSS values can be decreased by a 4-week programme intervention. When the responses of the two groups were compared, the experimental group outperformed the control group by a huge margin.

The study's goal was to compare the effects of stretching exercises on subjects. According to the inclusion criteria, this study was done on 20 volunteers between the ages of 18 and 25, who were randomly separated into two groups (groups A and B). Subjects in group A were given stretching exercises, while those in group B were given strengthening exercises. The outcome measures were assessed at the conclusion of the fourth week using the numeric pain rating scale (NPRS) and the medial tibial stress scale (MTSS).

The NPRS was 8.10 (+1.20) and the MTSS was 7.90 (+0.88) in group A before the intervention. The mean value of NPRS reduced to 2.90(+0.99) and MTSS was 2.80(+0.79) after the participant was treated with stretching exercises, indicating a difference between the groups that is statistically significant. The NPRS was 8.40 (+0.97) and the MTSS was 8.10 (+0.88) in group B before the intervention. The mean value of NPRS reduced to 6.80(+0.79) and MTSS to 6.10(+1.20) after the subject was treated with strengthening activities, indicating a statistically significant data difference between the groups. According to statistical analysis, both groups A and B improved their NPRS scores. When the two groups were compared at the end of four weeks, the patients in group A, who received stretching activities improved more in the NPRS than the subjects in group B who received strengthening exercises.

CONCLUSION:

Stretching exercises are more helpful than strengthening workouts, according to the findings. Individuals who require NPRS may benefit from the stretching activities recommended here, according to our findings. As a result, it was suggested that this treatment be used in clinical practise.

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CONFLICT OF INTEREST: There are no conflicts of interest declared by the authors.

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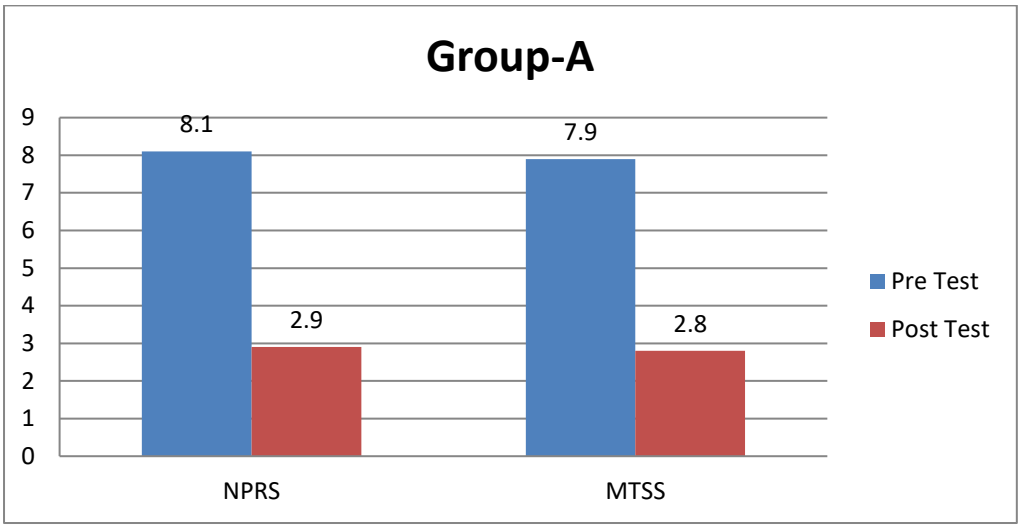
Table 1: Group A Pre-test and Post-test Values.

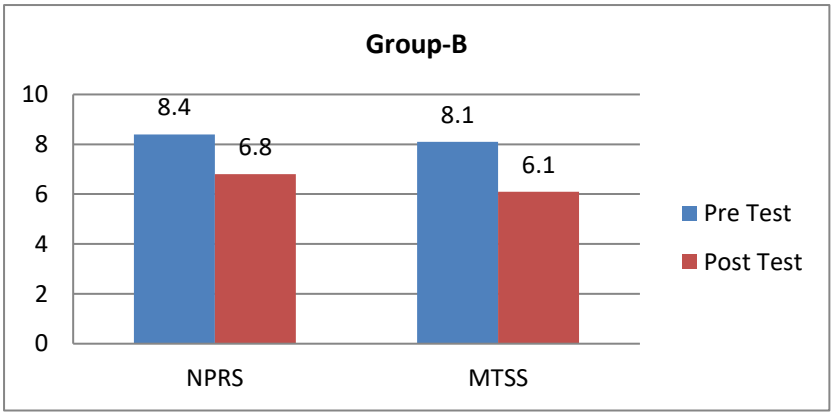
OUTCOME	GROUP-A	Mean	Standard Deviation(SD)	't' test	Significance
NPRS	PRE TEST	8.10	1.20	10.6145	>0.0001
	POST TEST	2.90	0.99		
MTSS	PRE TEST	7.90	0.88	14.655	>0.0001
	POST TEST	2.80	0.79		



Graph-1: Pre-test & Post - test Values of Group A

Table-2: Group B Pre-test &Post test Values

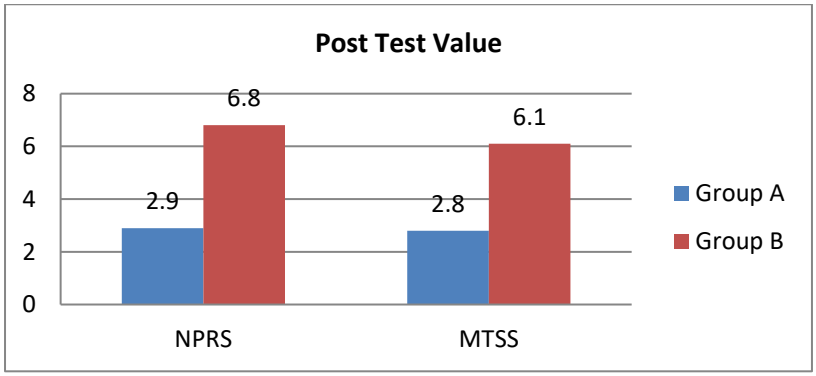
OUTCOME	GROUP-A	Mean	Standard Deviation(SD)	't' test	Significance
NPRS	PRE TEST	8.40	0.97	3.5386	>0.0001
	POST TEST	6.80	0.79		
MTSS	PRE TEST	8.10	0.88	3.8730	>0.0001
	POST TEST	6.10	1.20		



Graph-2: Pre-test & Post - test Values of Group B

Table-3:Post-test between group A and B

Parameter	Post Test Values				't' test	Significance
	Group A		Group B			
	Mean	SD	Mean	SD		
NPRS	2.90	0.99	6.80	0.79	9.7163	>0.0001
MTSS	2.80	0.79	6.10	1.20	7.2786	>0.0001



Graph-3: Post-test between group A and B