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Analysis of Physical Performance and Pain During Myofascial Trigger Point Release Combined with Self-Stretching for Plantar Heel Pain Athletes

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Abstract:
A common problem for athletes is calf muscle tightness, especially when training periods. The symptoms are a gradual tightness of the calf muscle during training or running. A player's calf muscle may have gradually tightness up over a period of time through poor flexibility and stretching or biomechanical problem. There are abundant literatures related with self stretching protocol, still the relationship with the muscle integrity are very less. This study focused to find out the myofascial trigger point release combined with self stretching will improve the physical performance and pain for plantar heel pain athlete. It is randomized experimental study with a total of 30 athletes were selected by a convenient sampling method with the age group range from 18 – 25 yrs. Study was conducted for a duration of 6 months. The parameters used in this study are physical performance and pain, which are measured using foot and ankle ability measure and visual analog scale respectively. The results were calculated using student 't' test. The result found that it has a strong variation exist in the parameters.the study concluded that the myofascial trigger point release with self stretching were improve physical performance in plantar heel pain in athletes.

Key words: *Myofascial trigger point release, self stretching plantar heel pain*

1. Introduction

Plantar heel pain is a commonly encountered orthopedic problem that can cause significant discomfort and a limb pain because of the difficulty in bearing weight. In fact, some authors have reported that plantar fasciitis or plantar heel pain accounts for between 8% and 15% of foot complains in nonathletic and athletes population Taunton et al 2002.plantar heel pain has negative impact on foot – specific and general health-related quality of life, and shows distinct pattern of disability on different functional domains. Thus, sports physiotherapy should be aware of the most appropriate management techniques for this condition.

A common problem for athletes is calf muscle tightness, especially when training periods. A player's calf muscle may have gradually tightness up over periods of time through poor flexibility and stretching, or biomechanical problem in their running style. The heel can absorb 110% of body weight during walking and 200% of body weight during running. Dorsiflexion of the toes applies traction stress at the origin of the plantar fascia. A contracture in the triceps surae can increase the traction load at the origin of plantar fascia during weight-bearing activities.

Plantar heel pain among athletes is usually due to overuse and poor biomechanics. However, muscle strength imbalance and muscle tightness have also been indicated as causes of plantar heel pain. Other possible contributing factors to plantar heel pain include loss of plantar fat pad with advancing age, increased body-weight.

According to Romulo Renan, et al (2011) soft tissue manual therapy can further improvement for management for heel pain. Trigger point or muscle knots, are described hyperirritable spots in skeletal muscle that are associate with palpable nodules in taut bands of muscle fibers. Trigger point belive that palpable nodules are small contraction knota and common cause of pain.

During the past few decades, myofascial trigger points (MTrp) and myofascial pain syndromes (MPS) have received much attention in the scientific and clinical literature. Though the calf muscles are very strong, they are easily overloaded by everyday activities. The trigger points that develop in these muscles refer pain to the foot for one reason: to get you off your feet and allow the overloaded calf muscles to recover.

There are 6 muscles group that contain trigger points that refer pain to the foot.

- The gastrocnemius
- The soleus
- The tiabialis anterior are the commonly involved muscles.

If the Achilles tension and calf muscle, increase the prevalence of plantar fasciitis. This is due to tightness in these muscles, which increase dorsiflextion (upward movement) of the large toe and stretching the plantar fascia causing to inflame. Therefore it makes sense that reduction of the tightness of the Achilles tendon and calf muscles will have a positive effective on heel pain.

2. Methodology and Procedure

To achieve the purpose of the study 30 patient were selected randomly from the Department of n Physiotherapy, KG College of Physiotherapy, Coimbatore. Athletes selected were clinical diagnosis of unilateral plantar heel pain, Who fulfill the predetermined inclusive and exclusive criteria were selected and divided into 2 groups by simple random sampling method. Each group consists of 15 patients. Groups are named as group A, and B.They are males belonging to the age group of 18 - 25 years. Athletes in the experimental group received Myofacial trigger point release followed by self stretching. Athletes in the control group received self stretching alone. Pain and Physical Performance was used as outcome measures and measured by the visual analog scale (VAS) and Foot and ankle ability measure (FAAM). Student't' test was used for analyses of the values using SPSS 16.

3. Results & Analysis

The table I shows the results of comparative mean values, mean difference, standard deviation and unpaired 't'test value of Group A and Group B (Post test) Pain – Visual Analogue Scale.

GROUPS	N	MEAN	STANDARD DEVIATION	t-VALUE
GROUP A	15	4.40	1.40	3.0880
GROUP B	15	3.13	0.14	

Table 1: Pain – Visual Analogue Scale

The t values obtained is signficant as it is greater than the tabulates t value (1.7011) for df =28 at 0.05% level of significance

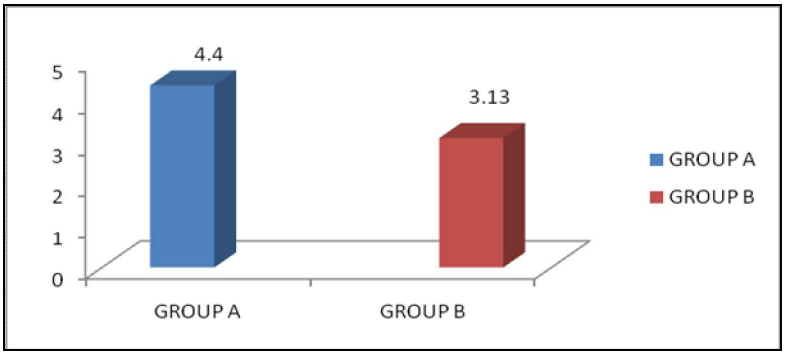

Figure 1

The table I shows the results of comparative mean values, mean difference, standard deviation and unpaired 't'test value of Group A and Group B (Post test) Pain – Visual Analogue Scale

GROUPS	N	MEAN	STANDARD DEVIATION	t-VALUE
GROUP A	15	75.00	5.67	2.7043
GROUP B	15	80.93	6.33	

Table 2: Physical Performance-Faam

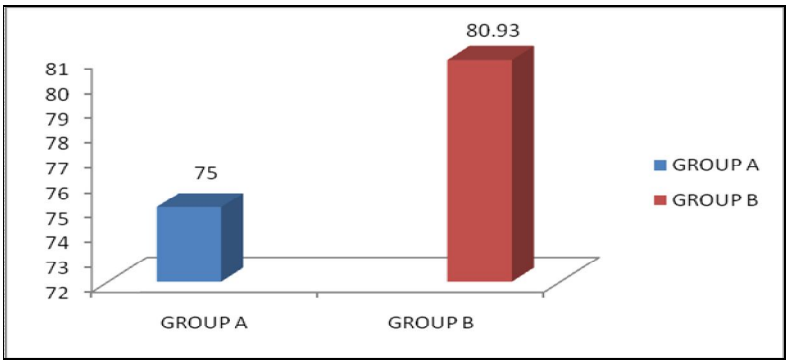

Figure 2

4. Discussion

For the short term treatment of plantar heel pain there is no significant benefit in foot function and foot health compared to stretching (Joel Radford). This statement says that the stretching alone may reduce the pain but there is not significant improvement in the foot function. Muscle tightness is a limiting factor for optimal physical performance and important intrinsic factors for plantar heel pain in athletes. (Pawlak, (1998) So the extract mechanism of reduction of physical performance is by the development of the muscle tension and muscle tightness. Therefore the muscle tightness will be reduced by the trigger point release to the gastronimus and soleus muscle, hence increasing the effectiveness of stretching. In fact it has been proposed that compressing the sarcomeres by direct pressure combined with active stretching of the involved muscle may equalise the length of sarcomeres and consequently decrease the pain and increase the physical performance (Romulo Renum (2009). Along with the support of these studies, pre test and post documentation with the help of visual analog scale for pain and Foot and Ankle Ability Measures for physical performance is done. Foot And Ankle Ability measures is a reliable; responsive and valid measure of physical performance with a broad range of musculo-skeletal disorders of lower leg, Foot and Ankle (Martin (2001)

In the table III & VI the post value of both visual analog scale and Foot and Ankle Ability Measures show that there is significant difference in between the self-stretching and myofascial trigger point release with self-stretching. The values of the post test analysis shows that there is decrease in reduction of pain and increase in the physical performance between the groups for plantar heel pain athletes.

Statistical tool such as paired t test and unpaired t test were used in this study. Paired t test showed that both control group and experimental group had significant effect on physical performance and pain for plantar heel pain in athletes. In the unpaired t test results showed that there is a significant difference between the control and experiment group in physical performance and pain for plantar heel pain in athletes.

5. Results and Conclusion

Statistical analysis was done paired 'T' test and unpaired't' test were used to find-out the difference between the two groups. The results showed that there is a reduction of pain and increasing physical performance for plantar heel pain in athletes. The study concluded that myofascial trigger point release with self-stretching improve physical performance in plantar heel pain in athletes

6. Limitations of the Study

- Absences of true control/sham or placebo group.
- These study only a short-term effects and further recommendation is to maintain at a long-term follow-up.
- Additionally, we did not successfully collect enough data on home exercise compliance to allow for analysis.
- Strengths of this study include an adequate sample size to detect

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