

Effect of IASTM vs. THERAGUN on Triceps Surae Active Range of Motion and Functional Movements in University Level Sprinters

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Abstract

Background: Sprinter is a person who runs very fast over a short distance in a race. In this study we determine the effect of Instrument Assisted Soft Tissue Manipulation (IASTM) vs THERAGUN separately on triceps surae muscle to check the Active Range of Motion and Functional Movement in sprinters of age group 18- 25 years.

Methods: Study design: Experimental study (pre-test and post-test design). Sampling Technique: The subjects were selected by Random Sampling. Source of Data: Universities of Patiala & Ludhiana Districts.

Conclusion: The study examined the effect of IASTM and THERAGUN which shows significant changes in the Active Range of Motion & functional movement.

Key words: IASTM, Theragun, Functional Movement.

Introduction

Sprint running needs highest maximum running velocity, good starting ability and endurance of that velocity capacity⁸. Sprinting is a salient constituent of several track and field events (e.g., 100-m & 200-m, long jump, etc.). Since the last 2 decades the profession of sports rehabilitation has traversed from conventional, isolated assessment and strengthening towards combined functional and movement-based approaches¹. Indeed, in 2013 the council of American Physical Therapy Association acquire the following perceiving for the profession of Physical Therapy that recognition of flawless movements in patients and athletes is the major concern for all Physical Therapists, and especially for sports medicine

specialists². With the aim to prepare individuals for the large array of activities, the rehabilitative professional must actualize that the screening of fundamental movement is of vital importance³. The author has presented Functional Movement Screening Tests based on pre-season screening and coupled components⁴. This test comprised of 7 movement tests that can spot the constraints and disparity in natural movement patterns. Every test is chalk up on a 0 to 3 scale with 3 being the best score and scores of all tests are then footed up for a total score².

Over the last few years, the analysis and treatment of myofascial pathologies has become an indispensable constituent of the rehabilitation of human neuro-musculoskeletal pathologies. In

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accordance with, numerous soft tissues approach, and practice of myofascial therapy seemed to developed sighting at further integrated assessment and treatment of the human body⁵.

Handheld Percussive Massage Therapy is a choice of warm-up routine, it increases flexibility⁶ and reduce post-exercise Delayed Onset of Muscle Soreness⁷. This treatment probably incorporates the constituents of conventional massage and vibration therapy. So, this device, has attain vogue in the past few years in therapeutic use and in sports practices. It is used with the objective of increasing flexibility but also hasten recovery⁹.

Instrument Assisted Soft Tissue Mobilization is a soft tissue treatment technique where an instrument is used to provide a mobilizing impulse to positively act on myofascial adhesion and scar tissue¹⁰. This technique is centered on the reasoning launched by James Cyriax instead, but it implies using uniquely cut-lined steel devices instead of cross friction massage with fingers to generate manageable micro trauma in the soft tissues (e.g., scar tissue, myofascial adhesions) with the motive of decreasing pain and improving the Range of Motion functions¹³. Fousekis et al. manifested that the intervention of IASTM technique on Superficial Back Line of either the superior or the underneath parts might entail to a noteworthy increase in hamstring muscle flexibility regardless of the administration area¹².

Material and Method

Study design: Experimental study (pre-test and post-test design).

Sampling Technique: The subjects were selected by Random Sampling.

Source of Data: Universities of Patiala & Ludhiana Districts

Eligibility:

Inclusion Criteria

- Age of the players should be 18-25 years.
- BMI – 21+- 2.5.
- Genders preferably males to create homogeneity and by a corroboration exists when measured by dint of shear

wave elastography that males reveal more gastrocnemius tightness than females.

- At least more than 3 years of training age.
- University level players (sprinters).

Exclusion Criteria

- Subject with lower extremity constructive surgery in the past two years.
- Subject undergoing treatment for any lower limb injury.
- Subject with ankle instability measured with Cumberland Ankle Instability tool.
- Subject with respiratory and cardiovascular diseases.
- Subjects those were smokers and drinkers and users of medications known to affect cardiorespiratory functions.
- Declined to participate.

Procedure

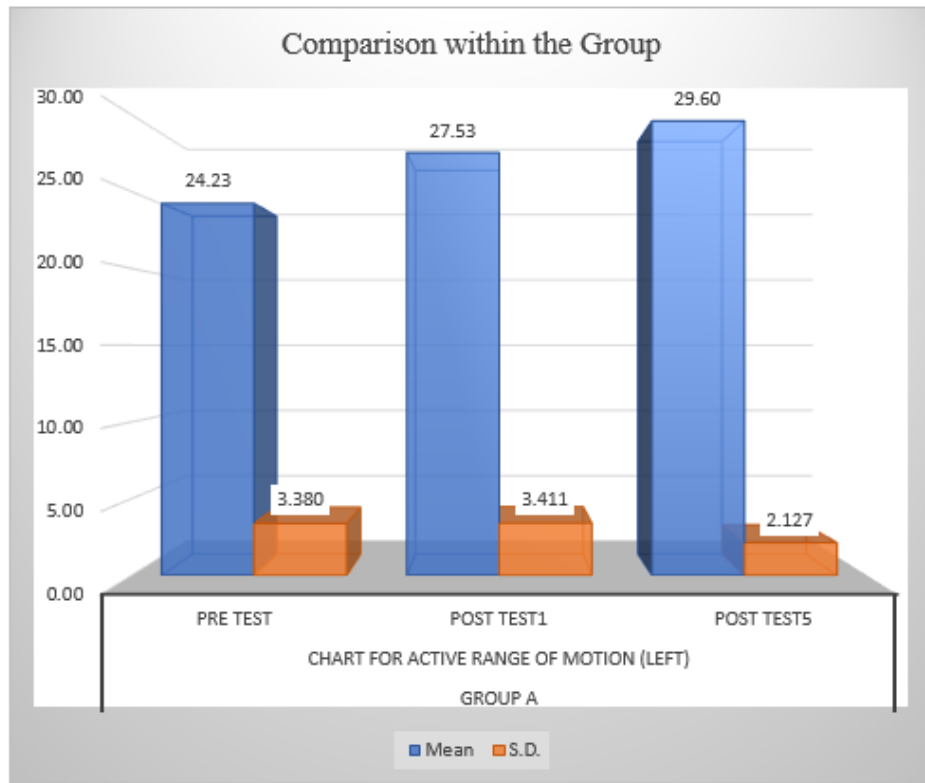
All participants who fulfilled the inclusion criteria were enrolled into the study after signing prior informed consent. All 60 (N=60) male sprinters between the age group of 18-25 were randomly assigned into two (30 in each group) treatment groups mainly GROUP A: Subjects received five sessions IASTM on triceps surae muscles with three days gap in between consecutive sessions, GROUP B: Subjects received five sessions of Handheld percussive massage therapy on triceps surae muscles with three days gap in between consecutive sessions. All subjects agreed not to change or increase their current exercise habits during the course of the study. All the subjects were made to perform warm-up protocol including on spot marching and heel digs before Pre- treatment measurements of Active Range of Motion, Functional Movements on triceps surae muscles.

Result

60 males participated in the study with no subjects lost to follow up. 50% subjects received IASTM, and 50% subjects received THERAGUN application. Across the two intervention groups, the subjects were of 18-25 years of age group and an average body mass index BMI 21+- 2.5 Kg/ m. sq.

Graphs (1.1 & 1.2) shows that individuals in the IASTM group exhibited a significant improvement in the performance of the ACTIVE RANGE of MOTION

when compared to those in the THERAGUN group at immediate post testing ($p = 0.0065$) and testing on the 5th test day later ($p = 0.0078$).



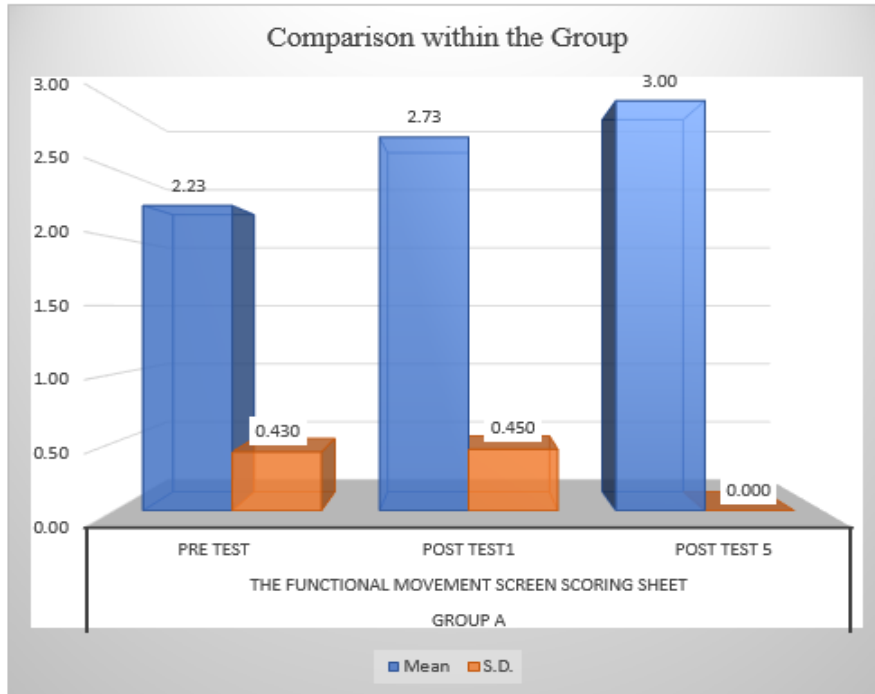
(Graph 1.1)



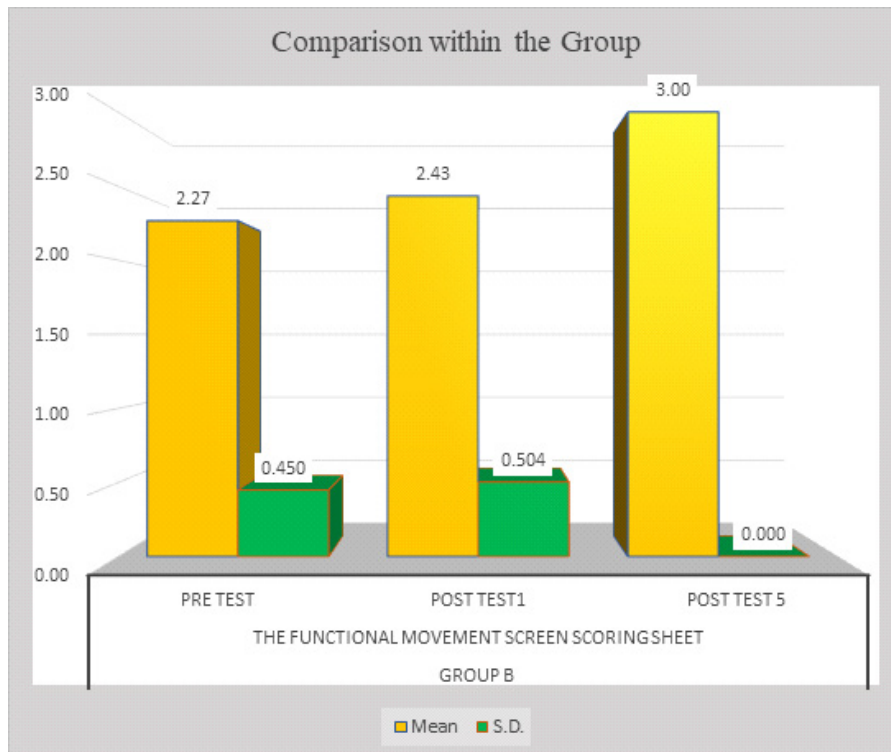
(Graph 1.2)

Graphs (2.1 & 2.2) shows that individuals in the IASTM group exhibited a significant improvement in the performance of the overhead deep squat when compared to those in the

THERAGUN group at immediate post testing ($p = 0.0027$) and testing on the 5th test day later ($p = 0.0016$).



(Graph 2.1)



(Graph 2.2)

Discussion

Formally manipulation has been used as a genre of myofascial release to help to decrease fastening of the fibres and enhances the performance in sports.

There was an improvement in strength by 2 folds post treatment of Handheld percussive massage therapy was discussed by Lee et al in 2018, he also hints at the use of Handheld percussive massage therapy might help in remobilizing the fascia back to its normal aligned state, which can bring about the enhancement of soft tissue compliance by enabling the muscle to lengthen and thus increase the AROM and functional movement.

Schleip R. in 2003 described the adaptation of flexibility on an application of IASTM by an improvement in the fascial sliding, a decrease in collagen resistance and increase in local temperature. IASTM showed improvement in AROM and functional movement for chronic ankle pain by Sandrey in 2012 as a result of giving recoverable microtrauma to the muscle which enhances the formation of fibroblast cells and collagen remodelling.

Conclusion

The study examined the effect of IASTM and THERAGUN which shows significant changes in the Active Range of Motion & functional movement were present. According to few studies which shows that IASTM shows better results as it penetrates deeper in the muscle group providing better fibroblast and fibroblast cell formation and remodeling of the collagen fibers. So, this study concluded that IASTM shows finer result in comparison of Theragun on functional movement, active range of motion.

Limitations

1. All the sprinters were going through their normal training routine throughout the time period of data collection.
2. Influence of Covid-19 (2019-2021) pandemic on training.
3. Sprinter's diet was not taken into consideration during the research time span.

Delimitations

1. The study will be delimited to 60 sprinters only.
2. The study will be demarcated to only few selected variables Active Range of Motion and Functional Movements of triceps surae muscles.
3. The study will be demarcated to only male sprinters aged between 18-25 years.

Ethical Clearance: prior to the study conducted on the subjects, procedure and guidelines were orally presented and in written form. Subjects agreeing to participate signed a consent form.

Source of Funding: Self

Conflict of Interest: Nil

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