



LITERATURE REVIEW ON EFFECTS OF MYOFASCIAL RELEASE IN TENNIS LEG.

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Abstract

Background

Tennis leg usually results from a tear of the medial head of gastrocnemius muscle. Tennis leg is caused when partial tear of gastrocnemius muscle happens because of sudden stretching of knee simultaneously with forceful dorsiflexion resulting in disruption of the fibers in aponeurosis. The gastrocnemius muscle is the third most strained muscle among the sports person.

Shearing pain and swelling in the calf, the pain aggravates as the foot is passively moved into dorsiflexion and sometimes the player complains of hearing a “pop” sound, Weight bearing is painful on the affected leg and tenderness on touching the calf.

Tennis leg is mostly seen in people who are involved in racquet sport, running, skiing and jumping but it was first seen in tennis player in 1883 by Powell, hence the name tennis leg was given.

Need for the study

The need of this study is to find whether the myofascial release in the treatment of tennis leg represents an effective option in reducing pain, disability and increase range of motion.

METHODS: Cochrane library, Google scholar and PubMed were searched. There were no restrictions on the data applied to review articles. Data were tabulated by study design, outcome measures and the results obtained were arranged in a chronological order.

Results: -

Of the 10 articles, 3 articles shows that the myofascial release is more beneficial than other treatments in increasing the range of motion. 1 article showed that there is mixed result in both quality and quantity. 3 articles showed improvement in stiffness with foam roller. 3 articles showed that in tennis leg the medial gastrocnemius is more involved.

Conclusion: -

After, a detail review of literature it is been observed that myofascial release treatment, are commonly done in gastrocnemius stiffness.so, after reviewing the literature feels like further studies should be done to give accurate statement.

Keywords: -

Tennis leg, myofascial release, gastrocnemius stiffness, calf pain

INTRODUCTION

“Tennis Leg” is a condition which results from tear of the medial head of gastrocnemius muscle. The tear can be partial or complete tear. A partial tear is defined by the disruption localized in the musculotendinous junction and full tear of whole medial head of gastrocnemius muscle. ⁽¹⁾ Tennis leg is caused because of slight contraction of the calf muscle due to sudden knee extension with overstretching. ⁽¹⁾

Gastrocnemius is the calf muscle, which is outermost muscle consisting of medial and lateral head. The lateral and medial heads of the muscle originate in the posterior part of femoral condyle and the medial condyle. The tear of the medial head is described as “tennis leg” and comes third in most commonly strained muscle in athletes. ⁽²⁾ Clinical findings include of searing pain and swelling in the calf muscles, the pain aggravates with passive dorsiflexion of the foot and sometimes the player complaints of hearing a “pop” sound, Weight bearing is painful on the affected leg and tenderness is felt on touching the calf. ⁽³⁾

It is most common among athletes from the age of 22-28 years, more often seen in male compared to women and also have chances of recurring in approximately 19% to 31% of cases. Tennis leg is commonly seen in players involved in racquet sport, running, skiing and jumping but it was first seen and described in tennis player in 1883 by Powell, hence the name Tennis leg. ⁽⁴⁾

Myofascial release is a manual technique which is used to stretch the restricted fascia ⁽⁵⁾. The term myofascial release was given by Anthony Chile, DO; John Peckham, DO; and Carol Manheim in 1981. ⁽⁶⁾ MFR appears helpful in the field of physical therapy in reduce muscle stiffness, relief of pain, and improve range of motion (ROM).

On contemporary, self-myofascial release (SMR) is commonly applied in the sport field. Self-myofascial release involves administration of compacting force to the soft tissue and the players can do it by themselves. This technique imitates the outcome of the techniques of the manual therapy and deals with the soft tissue disorder. Using foam roller can enhance sprint performance, reduce muscle pain and improve neuromuscular efficiency. ⁽⁷⁾

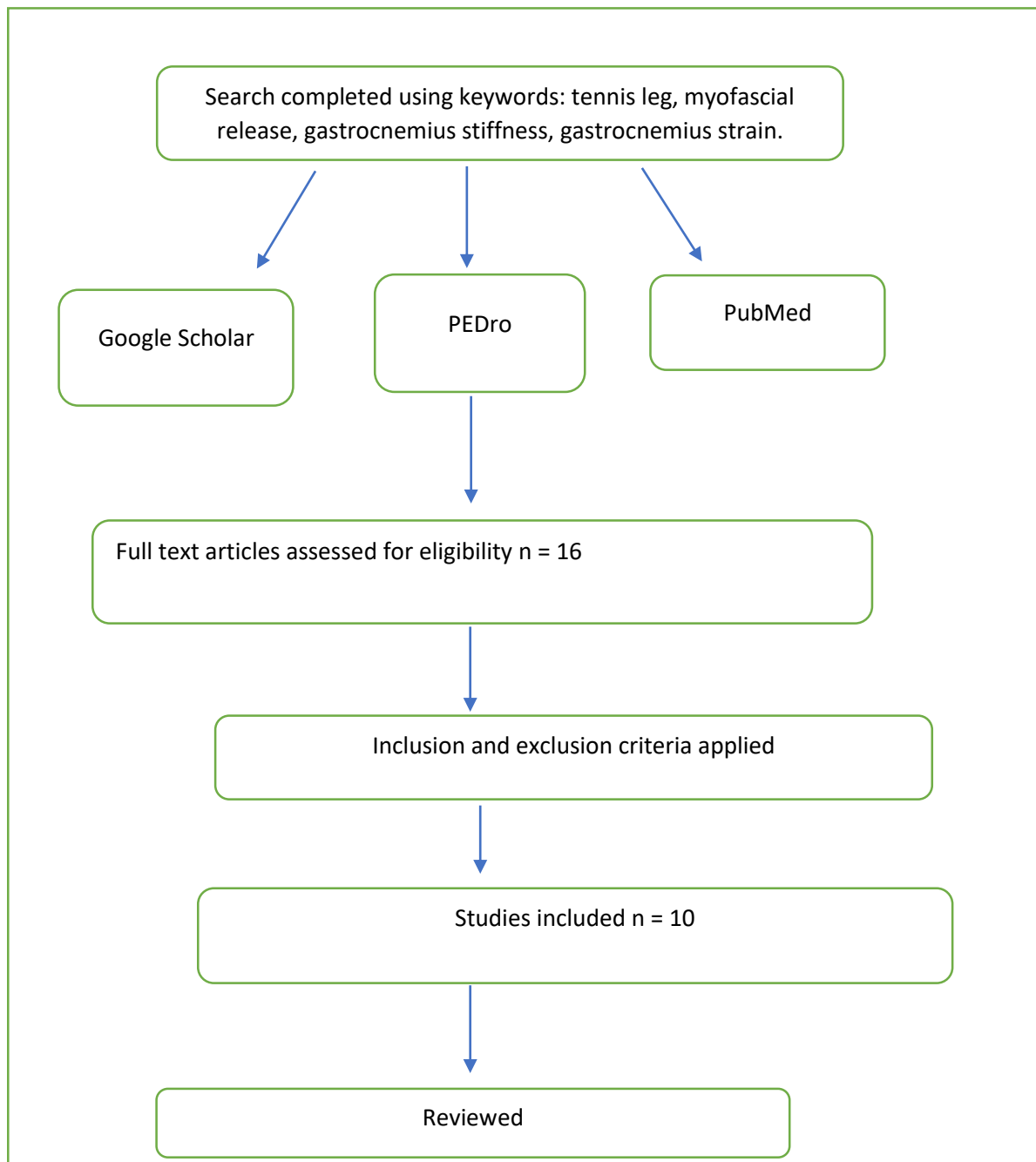
The compressive myofascial release and the instrument assisted soft tissue mobilization (IASTM) are among mostly used soft tissue mobilization. In Compressive myofascial release there is application of compression and holding the stretch to release the area. IASTM identifies and tends myofascial problems. Both the approaches are used for treating scar tissue, fascial bond, or any tightness in the Musculo tendinous area and also tends certain areas of restriction. ⁽⁸⁾⁽⁹⁾

Myofascial release (MFR) helps in treating somatic dysfunctions include positional asymmetry, restricted range of motion, abnormal tissue laxity. ⁽⁹⁾ Both approaches follow similar concept for the purpose of tending certain spots of restrictions, to free scar tissue, tend fascial bond, and lessen tautness in the musculotendinous area. ⁽¹⁰⁾

The objective of this study includes:

The objective is to review the literatures for finding effectiveness of MFR in Tennis leg among athletes.

METHODOLOGY:-



Literature Search Methodology: Google Scholar, Pub Med and Science direct were used to get the journals. The articles were recognized on the basis of the keywords. All the articles were gathered in complete text. 16 articles were gathered in total, of which 10 were chosen for the review.

Study Selection Data extraction: all the articles collected were put in tabulated form according to the size of the samples, treatment methods used, outcome measures and the results derived, all put in chronological order.

Inclusion criteria: 1. English language only; 2. myofascial release; 3. published only in peer review journals; 4. Human populations; 5. Tennis leg

Exclusion criteria: 1. editorials expert opinion; 2. Other than English Language

Literature Evaluation: The outcome of this study is diverse in nature. Out of the 16 original articles, 10 articles were suitable. No limitations on dates were put to review article. All the studies were categorized into 3 Experimental studies, 1 pilot studies, 1 RCT, 1 comparative, 2 observational study, 2 systemic review.

S. NO	AUTHORS	YEAR & JOURNAL	TYPE OF STUDY	OUTCOME MEASURES	RESULTS
01.	Hironobu Kuruma et.al,	2013- The journal of physical therapy science	Comparative study	Goniometer was used to assess Range of motion. For stiffness a durometer was used.	After the treatment there was improvement in range of motion in the MFR-Q, MFR-H and stretch group. No change in the muscle stiffness.
02.	Kristin McKenney et.al,	2013- journal of athletic training	Systemic review	PEDro scale	The result demonstrates that effectiveness of MFR as a treatment for orthopedic condition is mixed in both quality and results.
03.	Yoshimura et.al,	2021- Journal of Strength & Conditioning Research	cross over study	Dorsiflexion and plantarflexion range of motion and visual analog scale	Increase in range of motion in dorsiflexion and plantar flexion with foam rolling intervention.
04.	Ichikawa K et.al,	2015- journal of body work and movement therapies	A pilot study	B- mode ultrasound, and real-time elastography (RTE) and durometer for stiffness	MFR showed positive changes in deep fascial motion and also muscle stiffness.
05.	Harwin JR et.al,	2017- Elsevier	Experimental study	MRI- magnetic resonance imaging.	Tennis leg is mostly associated with tear of the medial head of the calf muscle.
06.	Stanek J t.al,	2018-The journal of athletic training	Randomized control trial	Ankle dorsiflexion were measured.	Dorsiflexion improved for the standing position and the kneeling position after CMR compared with the GT and control groups.
07.	Bhatia M et.at,	2019- medical journal armed forces India	Observational study	ultrasound and colour doppler. And MRI for left leg was done.	In case of calf pain proper history with a sonography helps in giving a right diagnosis.
08.	Vijayakumar M et.al,	2019-the international journal of health science and research	Experimental study	Visual Analogue Scale, Pressure Algometry, ADF ROM	CMR improved ADF ROM while, IASTM was helpful in relieving pain.

09.	Chang TT et.al,	2021- the frontiers in physiology	Experimental study	A MyotonPRO was used for stiffness.	After the foam roller intervention, stiffness of the lateral gastrocnemius and medial gastrocnemius were reduced. No difference in AT stiffness.
10	Beardsley C et.al,	2015-journal of body works and movement therapies	A systemic review	To assess the quality of study PEDro scale was used.	SMFR showed improvement in flexibility and lessen muscle soreness.

DISCUSSION

The present study investigated gastrocnemius stiffness (TL) before and after an intervention in foam roller and control groups. The results showed a significant decrease in gastrocnemius stiffness and a significant increase in ankle dorsiflexion ROM in foam roller group, with no significant change in control group.

According Bhatia .M, et. Al, Tennis leg results from partial or complete tear of the musculotendinous junction of the medial head of gastrocnemius and presents with acute onset of pain and swelling in the calf. The pain and tenderness in the calf increases with passive dorsiflexion of ankle joint.

Calf strain is also known as “tennis leg” as it is commonly occurred in that sport. However, Calf strains are not limited to tennis and also occur in many other sports like American football.

According to Froimson AI, et. al, A mix of hyperextension of knee and ankle dorsiflexion is prone to producing this lesion. In fully extended knee and the fully dorsiflexed ankle, there is increased stretch in gastrocnemius, adding enough stress on the elastic components of muscle resulting in a tear.

In a study by Chang TT et.al, it revealed that if the muscle stiffness is increased there can be decreased ROM and diminished function, which results in risk of injury in ankle joint in both acute and chronic conditions. Myoton PRO was used to measure the stiffness in MG and LG with the ankle in a neutral position. SMR is a

treatment method done by self where there is application of pressure to soft tissue to minimise the stiffness. The Foam Roller, is a device mostly used as self-myofascial release, in sport setting and physical therapy. The use of FR does not diminish the muscle strength and jump height, also enhances sprint performance, remove muscle pain, and enhances neuromuscular efficiency.

Akane Yoshimura, et.al, mentioned in his study that use of FR on the calf resulted in an improvement in ankle dorsiflexion ROM. As per this study, mechanical stimulation with the load and stretch used in FR method triggers a mechanical stimulation, which has neurological biomechanical, psychological and physiological effects, resulting in both global and local changes. In local changes, the tissues become softer as the blood flow, skin or muscle temperature increases, and there is reduced stiffness in tissue, termed as “thixotropy”. And in global changes there is increased tolerance to stretch during passive joint movement as a result of decrease pain sensitivity and increased parasympathetic activity.

CONCLUSION: -

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RESULT: -

Out of 10 articles, 3 articles shows that the myofascial release is more beneficial than other treatments in improving range of motion. 1 article showed that there is mixed result in both quality and quantity.3 articles showed improvement in stiffness with foam roller. 3 articles showed that in tennis leg the medial gastrocnemius is more involved.

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