OPEN ACCESS

Exercise and Quality of Life Journal (2024) 16(1): 61-66
DOI: 10.31382/eqol.240606

ORIGINAL ARTICLE

Effectiveness of EMMETT technique on Iliotibial band tightness in football players

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Received: 11. May 2024 | Accepted: 03. June 2024

Abstract

The EMMETT technique, developed in Australia, is a manual therapy method gaining recognition for its non-invasive approach and reported effectiveness. This study aims to determine the impact of the EMMETT technique on iliotibial band (ITB) flexibility in young male football athletes. A total of 43 athletes (age 17.21 ± 1.99 years) were randomly assigned to either a control group (n=22) or an experimental group (n=21). The experimental group received the EMMETT technique, while the control group remained in a side-lying position for one minute. ITB flexibility was measured using the EasyAngle® goniometer through the Ober test before and after the intervention. The results showed a significant increase in ITB flexibility in the experimental group compared to the control group. Despite the positive findings, the study has limitations, including a small sample size, focus on a specific demographic (young male football players), and short-term assessment. Future research should include larger, more diverse populations and long-term follow-up to validate these results and explore the broader applications of the EMMETT technique. This study supports the potential of the EMMETT technique as an effective manual therapy for improving ITB flexibility.

Keywords: manual therapy · range of motion · rehabilitation

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Introduction

Manual therapy (MT) is defined as a "broad group of passive interventions in which manual therapists (MT's) use their hands to administer skilled movements designed to modulate pain, increase joint range of motion, reduce or eliminate soft tissue swelling, inflammation or restriction, induce relaxation, improve contractile and non-contractile tissue extensibility, and improve pulmonary function". These interventions involve a variety of techniques, such as the application of graded forces (APTA, 2014; Sheldon, 2022). The EMMETT technique is one of the manual therapy methods developed in Australia that has been also used in Europe in recent years. Its founder, Ross Emmett, described it as a corrective technique that acts on the junction of sensory and muscle receptors, which he named EMMETT points. It is used to treat a variety of conditions, including musculoskeletal pain, stress, and anxiety. The technique involves applying light pressure 3 times in the same place for 5-20 seconds. The first pressure is meant to assess the tissue, the second is for correction, and the third confirms that a change has been made. The result is often an immediate physical change, creating new movement patterns without pain and improving balance (Emmett, 2012), myofascial release (Sharp, 2012), and improving muscle strength (Kecman, 2019). The iliotibial band (ITB) is a thick band of connective tissue that runs along the outside of the thigh. It extends from the iliac crest (the top of the pelvic bone) down to the lateral part of the tibia (the outer part of the shinbone). Iliotibial band syndrome (ITBS) is one of the most common overuse syndromes of ITB causing knee pain, and is particularly common in runners (Van der Worp, 2012). ITBS is also common in other sports, such as cycling, field sports, and rowing, with occasional cases in non-athletes (Opara & Kozinc, 2023). For improving iliotibial band (ITB) flexibility, the EMMETT technique can be beneficial as it includes specific procedures targeting the ITB and related structures. This technique has been noted to assist with ITB-related issues by releasing tension in the muscles and fascia, which can help increase the range of motion and alleviate discomfort in the hip and knee (Sharp, 2012). The EMMETT technique is gaining recognition in the field of manual therapy due to its non-invasive nature and reported effectiveness, but the lack of scientific research about it impacts the aim of this study to determine whether applying the EMMETT technique leads to significant increases in ITB flexibility.

Method

The study was conducted on 43 young male football athletes of regional level (17.21 ± 1.99 years old), who were randomly divided into two groups. The first group served as the control group (n=22), while the second experimental group (n=21) underwent the EMMETT technique. Three measurements of the range of motion (ROM) were taken on the dominant leg of the participants before and after applying the EMMETT technique in the experimental group. On the other hand, measurements were taken before and after resting for one minute in a side-lying position in the control group. The ROM for both the right and left leg was measured using the EasyAngle® goniometer through the Ober test position. The examinee lies on their side with the tested leg on top. The bottom leg can be flexed at the hip and knee for stability. The examiner stands behind the examinee, stabilizing the pelvis with one hand to prevent any tilting or rotation. The examiner flexes the top knee to 90 degrees, then abducts and extends the hip joint of the top leg, bringing it backward to position the ITB over the greater trochanter. The examiner places a digital goniometer on the posterior part of the thigh (direction hip joint – middle of knee joint) and slowly lowers the top leg toward the floor while maintaining the hip extension and abduction (Figure 1).

Figure 1. Testing position for ITB flexibility (OBER test) with EasyAngle® goniometer

At the end of the movement, the value is read on the digital goniometer which represents the amount of flexibility of the ITB band (maximal passive adduction through the extension of the hip). The digital goniometer used for measuring joints was the EasyAngle® by Meloqe devices. This device enables therapists to measure any joint in any direction accurately within 1 degree. It can be operated with one hand, allowing the therapist to use the other hand to support the patient. The intrarater and interrater reliability of this digital goniometer is good to excellent for all hip ROM measurements, with intrarater ranging from 0.81 to 0.97 and interrater ranging from 0.77 to 0.91 (Duffy et al., 2024). After applying the initial measurement of ITB flexibility through the Ober test position and with the EasyAngle®, for experimental group subjects was performed EMMETT technique protocol, while subjects from the control group stayed in the side laying position for one and half minutes. After that protocol, the second measurement of ITB flexibility was taken. To calculate the reliability of the measurements, all measurements were performed by the same evaluator, three initial measurements and three measurements after applying the EMMETT technique, i.e. in the control group after the rest position, have been done.

The EMMETT protocol involved two corrections: ITB and ITB/Sartorius. These corrections are performed on the dominant leg of the subject while they lie on their back in a relaxed position. For the ITB correction, the proximal and distal parts of the ITB are identified, and then light pressure is applied perpendicular to the body using the middle finger. The same process is followed for the ITB/Sartorius correction, which involves finding the midpoint of the ITB and Sartorius muscles. The pressure is held for 5-15 seconds or until the "first jump" is felt. Each correction lasts 1.5 minutes per person, and both corrections are applied three times in the same area with a 5-10-second pause between each repetition (Figure 2). Finally, to complete the EMMETT protocol the subject performs certain movements with the treated muscle group such as bending and extending the leg from the hip and knee, sitting down and standing up, and walking around the room.

Figure 2. Applying the EMMETT manual technique

All athletes received information and clarification of the testing and signed a consent form where all the stated conditions were noted. Parents or legal guardians signed the informed consent for participants under the age of 18. The Ethical Board of the University of Split, Faculty of Kinesiology, Split, Croatia, approved the study (Ref. no: 2181-205-02-05-22-001, Date of approval: 5.1.2022).

The data analysis was conducted using IBM SPSS Statistics software version 23.0 for Windows. The normality of the distribution fitting was tested with the Kolmogorov-Smirnov test. All variables, including every measurement, mean of three measurements, and differences between pre-treatment and post-treatment variables, were examined for normal distribution fitting. The descriptive statistics Data analysis was performed with IBM SPSS Statistics software version 23.0 for Windows. Distribution fitting was tested with the Kolmogorov-Sminrov test of normality where all variables (every measurement, mean of three measurements, differences between post-treatment and post-treatment variable) are determined a normal distribution fitting. The descriptive statistics were computed for all variables and expressed as an arithmetic mean and standard deviation (SD). Differences between the measurement of pre-treatment and post-treatment were tested by one-way ANOVA for repeated measures to determine the significant difference between the control and experimental groups. Intra-class correlation coefficient (ICC (3,1)) was calculated for all cases

for three pre-treatment measurements, as well as for three post-treatment measurements.

Results

The reliability of all three measurements by the same evaluator was assessed using the ICC (3,1) test. A digital goniometer (EasyAngle®) was used to establish excellent reliability, with values ranging from 0.913 to 9.381, which were interpreted according to Koo and Li (2016) where

ICC < 0.50 = poor, 0.50–0.75 = moderate, 0.75–0.90 = good, and 0.90 –1.00 = excellent.

Descriptive statistics of measured ITB flexibility variables are presented in Figure 3. In pre-treatment average ROM measurement of the experimental group was 28.43 degrees and in the control group was 30.36 degrees. In post-treatment average ROM measurement of the experimental group was 31.89 degrees and the control group was 30.45 degrees. In the experimental group, an increase of 3.46 degrees was obtained between the pre- and post-measurements, while in the control group, the ROM increased by a slight 0.09 degrees.

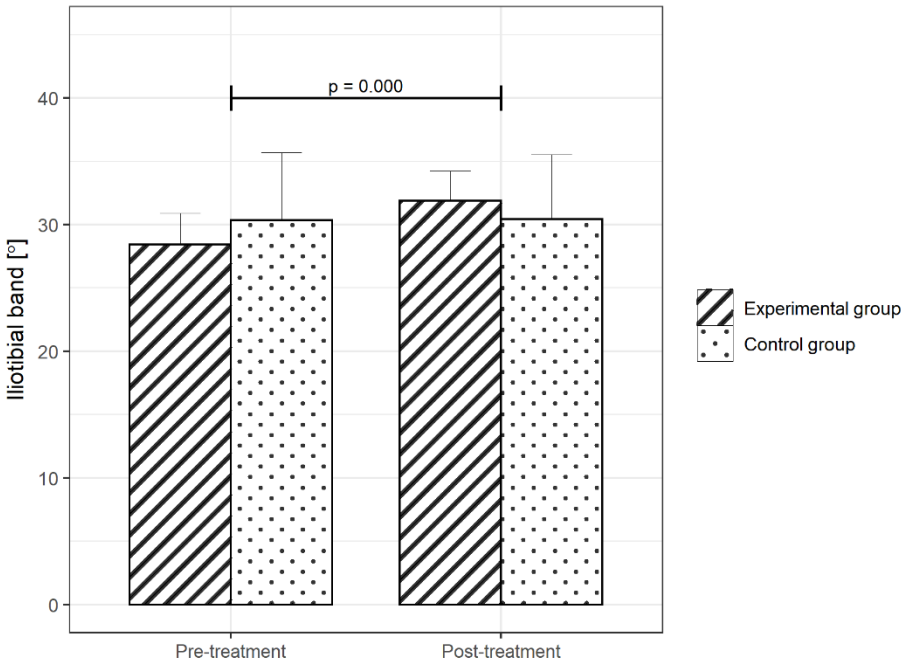

Figure 3. Differences between groups

The results from repeated measurements ANOVA are presented in the same figure. According to the univariate results for each variable, we can notice that in the pre-treatment variable, there is a not significant difference between the two groups (p=0.1375), as well as in the variable of post-treatment measurement (p=0.2463) and there is a significant difference in the variable of obtained differences between pre- and post-treatment ROM of ITB flexibility (p=0.0000). Multivariate results according to the WIlks'λ test in repeated measurement ANOVA indicate that the control and experimental groups were significantly different (p=0.000).

Discussion

The results demonstrate that the EMMETT technique significantly increases ITB flexibility compared to the control condition. The significant difference in ROM improvements between the groups suggests the technique's efficacy in enhancing ITB flexibility in young male football athletes. Sharp (2012) also reported that the EMMETT technique significantly improved the flexibility of ITB after one session while in the same study presented how foam rolling of the ITB did not result in increasing ITB flexibility. Pepper et al. (2021) observed that neither stretching nor foam rolling had any noticeable effect on realizing ITB stiffness. Research conducted by George et al. (2006), Ercole et al. (2010), and Afshari et al (2023), unequivocally demonstrates that different manual techniques significantly enhance ITB flexibility after one session. There are limited studies on the impact of the EMMETT technique on the relaxation of soft tissues, i.e. increasing ROM. When we talk about increasing the ROM of the hip joint using

manual techniques, the mentioned studies showed a significant impact after one session. In López-Bedoya et al. (2013) study, applying the active stretching technique for 9 weeks improved hip ROM and established long-term effects. On the other hand, there are a limited number of studies that indicate an increase in ROM of the hip joint or flexibility of the ITB by long-term application of some of the MT.

Although the EMMETT technique appears to be effective for myofascial release questions remain as to how and why manual therapies work and who responds best.

Effects are difficult to quantify because they seem to vary from person to person and much depends on the talent and experience of the therapist, or the equipment used (Sharp, 2012). For the issues highlighted in the limitation of this study, Kidd (2009) argues that myofascial release will never be evidence-based. Regardless of this, there is a need to quantify manual techniques and determine their real impact on soft tissue relaxation. Findings in the present study were obtained by measuring in the Ober test position. Opara and Kosinc (2023) consider that hip adduction in Ober's test position may be limited not only by the ITB but also by gluteal muscles and hip joint capsule tightness (Wang et al, 2006; Willet et al, 2016) and that the results measured through the Ober's test do not necessarily indicate an increase in hip adduction solely due to ITB release.

Conclusion

The EMMETT technique leads to significant increases in ITB flexibility in young male football athletes, suggesting its potential as a beneficial intervention for athletes suffering from ITB-related issues. The significant improvement in range of motion (ROM) observed in the experimental group highlights the technique's efficacy in enhancing ITB flexibility. These findings support the use of the EMMETT technique as a non-invasive and effective manual therapy method. Despite the positive results, this study has several limitations. Firstly, the sample size was relatively small, consisting of only 43 participants, which may limit the generalizability of the findings. Additionally, the study focused exclusively on young male football athletes, making it difficult to apply the results to other populations, such as females, older individuals, or athletes from different sports. Furthermore, the short-term nature of the study means that the long-term effects of the EMMETT technique on ITB flexibility were not assessed. The absence of a long-term follow-up limits the understanding of the durability of the observed improvements. Another limitation is the potential bias introduced by having a single evaluator perform all measurements, which could affect the objectivity of the results despite the high intrarater reliability. Lastly, while the study utilized a digital goniometer with excellent reliability, the measurement technique (Ober test position) may not exclusively reflect ITB flexibility, as it could also be influenced by tightness in other structures such as gluteal muscles and the hip joint capsule. Future research with larger and more diverse populations, long-term follow-up, and multiple evaluators is recommended to validate these findings and further explore the effectiveness of the EMMETT technique.

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