Research article

‹ PREVALENCE OF ILIOTIBIAL BAND TIGHTNESS AMONG COLLEGE STUDENTS›

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ABSTRACT

BACKGROUND: Iliotibial band tightness is a common musculoskeletal disorder that affects the musculoskeletal system such as nerve, tendon, muscles and the supporting structures. Tightness in muscle can leads to an imbalance in joint, lateral knee pain and muscular weakness. It can cause several problems like difficulty in walking, doing some activities and also reduces the range of motion. Muscle flexibility is a vital component of musculoskeletal fitness for functioning and maximizing the physical activity. So, it's necessary to aware people about the risk factors of Iliotibial band tightness. Hence, the purpose of the study is to find the Iliotibial band tightness among college students by using Ober's test.

STUDY DESIGN: Cross-Sectional Study

METHODOLOGY: A Cross- sectional study was conducted among 18-25 years of college students. Total of 205 students, selected through convenience sampling. Data was collected from the School of Physiotherapy. After taking the consent and explanation about the purpose of the study necessary demographic details including name, age, height, weight was obtained. Iliotibial band were assessed by using Ober's test.

RESULT: Iliotibial band tightness were analyzed using Ober's test with tightness of 46.3% positive in right leg, 52.2% positive in left leg and 69.8% positive in bilateral leg.

CONCLUSION: There is a marked tightness on Both sides > the left leg > the right leg among the students. Hence it is concluded that the college students should do the Iliotibial band stretching exercise in order to prevent the dysfunction of lower limb.

Keywords: Iliotibial band tightness, Ober's test, Tightness, Obesity, Flexibility

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INTRODUCTION

The Iliotibial band is a longitudinal fibrous sheath, which plays an important role structurethat involved in the lower extremity of the lateral compartment of the thigh. The primary function or action of Iliotibial band is to stabilize the hip and knee joints [1]. Iliotibial band tightness is a common condition of Knee injury, which is usually occurs in knee pain at the lateral aspect.

Whereas the pain is caused by the inflammation at the distal portion of the Iliotibial band. In case the Iliotibial band gets inflamed in its proximal portion, it causes referred hip pain [2]. Anatomically, the Iliotibial band is a non – elastic collagen structure, which crossesover both the hip and knee joints on the lateral aspect of thigh [3]. The Iliotibial band is a thickband of fascia lata which extends from the Iliac crest and down to the lateral tibial tubercle [4].From the proximal portion of the thigh, the deep fascia of thigh, Gluteus maximus and Tensorfascia lata which contributes to the Iliotibial band by receiving the fascial contributions from the deep fascial contributions [1]. In distally, the Iliotibial band becomes a soft tissue layer around the lateral part of knee [5].

The function of the proximal Iliotibial band includes Hip extension, Hip abduction, Lateral hip rotation [6]. Distally the Iliotibial band function depends upon the position of knee joint [7]. Iliotibial band stabilizes the knee joint from the hip to the knee. Due to trauma or overuse can be extremely painful and limit one's ability to move around which results in Iliotibial tract injuries [8]. The different functions of iliotibial band appear as they are influenced by posture and consequently, movement selection [9]. Excessive hip joint adduction leads to more tensile strain in Iliotibial band. The discomfort is caused by increased strain, which may eventually cause injury to the Iliotibial band and also it causes pressure at innervated adipose tissues among the Iliotibial tract and epicondyle of femur [10]. Iliotibial band tightness also be caused by non-modifiable anatomical variables such as difference in leg length and bony eminences of the lateral epicondyles, decreased elasticity and weakness of muscles especially in the muscles of hip joint [11].

Iliotibial band tightness is a condition which is secondary to increase the tension throughout the structure and most commonly the symptoms is caused at the distal insertion site.Those individuals who had increased in physical activity (particularly lower extremity performance) the condition is more common. During recent training intervals, usually the runners or cyclists have increased their mileage. This condition may seem through secondary to overuse and repetitive motion. The other structural predisposing risk factors are Gait abnormalities, Varus deformity of both knees [12]. Some risk factors for the development of Iliotibial band tightness including: high weekly mileage; pre-existing iliotibial band tightness; time spent walking or running on a track; interval training; muscular weakness of knee extensors; knee flexors; and hip abductors [13].

The main reason for muscular tightness is due to a reduction in the muscle ability which leads to a lower range of motion. Flexibility of the soft tissues can also be affected during prolonged sitting hours such as educational organization, jobs and also muscle tightness is verycommon in students and working people [14].

BACKGROUND OF THE STUDY: Iliotibial band is a tough band and it is non elastic scleroprotein in structure. Iliotibial bandis a muscle which crosses over more than one joint. So, it is known as Poly articular muscle. Iliotibial band is a fibrous connective tissue, which reinforces the Tensor fascia lata. The function of the Iliotibial band includes hip extension, hip abduction, lateral hip rotation. Iliotibial band muscle flexibility is incapable, due to some activities like prolonged sitting, lack of

physical activity, sedentary lifestyle in a college going students. So, this can lead to complications like tightness, knee pain, muscular weakness. Hence, the study focuses on to determine the percentage of people involving in Iliotibial band tightness among college students.

OBJECTIVES:

Primary objective: To evaluate the Prevalence of Iliotibial band flexibility among college students.

HYPOTHESIS

Null Hypothesis:

Alternate Hypothesis:

MATERIALS AND METHODOLOGY

The Cross-Sectional study was conducted at the School of Physiotherapy at AVMC Campus, Puducherry. For this study, the convenience sampling was used. This study involves total of 205 samples, including both genders and between the age groups of 18 to 25 years. In this study, samples were selected who fulfilled the inclusion criteria (both male and female, age group 18 to 25 years, subjects sitting for minimum of 5 to 6 hours per day) and the exclusion criteria (recent fractures of lower limb, deformities, soft tissue injury of lower limb, stiffness in knee and ankle results in decreased range of motion, any systemic illness). They were given the consent form and patient information sheet. Samples were assessed for Iliotibial band tightness using Ober's test for both the legs.

STUDY DESIGN: Cross-Sectional Study
STUDY SETTING: School of Physiotherapy, AVMC Campus, Puducherry

SAMPLE ALLOCATION TECHNIQUE: Convenience Sampling

STUDY PARTICIPANTS: 205 Samples

ELIGIBILITY CRITERIA:

INCLUSION CRITERIA

1.Both male and female

2.Age group 18 to 25 years

3.Subjects who are all prolonged sitting for minimum of 5 to 6 hours per day

EXCLUSION CRITERIA

1.Recent fractures of lower limb

2.Deformities

3.Soft tissue injury of lower limb

4.Stiffness in knee and ankle results in decreased range of motion

5.Any systemic illness

VARIABLES

INDEPENDENT VARIABLE:

Age

Gender

Height

Weight

BMI

DEPENDENT VARIABLE:

Ober's test

Validity and Reliability (ICC = 0.82-0.94) [18]

OBER'S TEST:

It is the most commonly used examination tool physically. The purpose of the Ober's test is to assess the tightness of Iliotibial band in an individual [16]

Position of the patient: Patients is in side lying

Position of therapist: Therapist is positioned behind the patient's pelvis

Procedure: The patient knee is flexed 90◦ and grasped by the one hand of the therapist and theother hand is to stabilize the pelvis in superolateral region. Then the patient hip is abducted andslightly extended passively by the therapist. Then the hip brought into adduction. Whether the hip will remain in

abduction the test will be positive, whereas the hip gets adducted the test will be negative [17]**Reliability and Validity:** ICC = 0.82-0.94[18]

STUDY PROCEDURE

DATA ANALYSIS

The table shows the characteristics and values of participants

CHARACTERISTICS	VALUES
Number of Subjects	205
Age	20.136± 1.6482
Gender	Male – 91(44.4%) Female – 114(55.6)

1.The table shows the frequency and percentage of Iliotibial band tightness among Right leg

RIGHT LEG		
	FREQUENCY (n)	PERCENTAGE %
POSITIVE	95	46.3%
NEGATIVE	110	53.7%
TOTAL	205	100.0%

INTERPRETATION OF RESULTS

2.The table shows the frequency and percentage of Iliotibial band tightness among Left leg

LEGT LEG		
	FREQUENCY (n)	PERCENTAGE %
POSITIVE	107	52.2%
NEGATIVE	98	47.8%
TOTAL	205	100.0%

3. **The table shows the frequency and percentage of Iliotibial band tightness among Bilaterally**

BILATERALLG		
	FREQUENCY (n)	PERCENTAGE %
POSITIVE	143	69.8%
NEGATIVE	62	30.2%
TOTAL	205	100.0%

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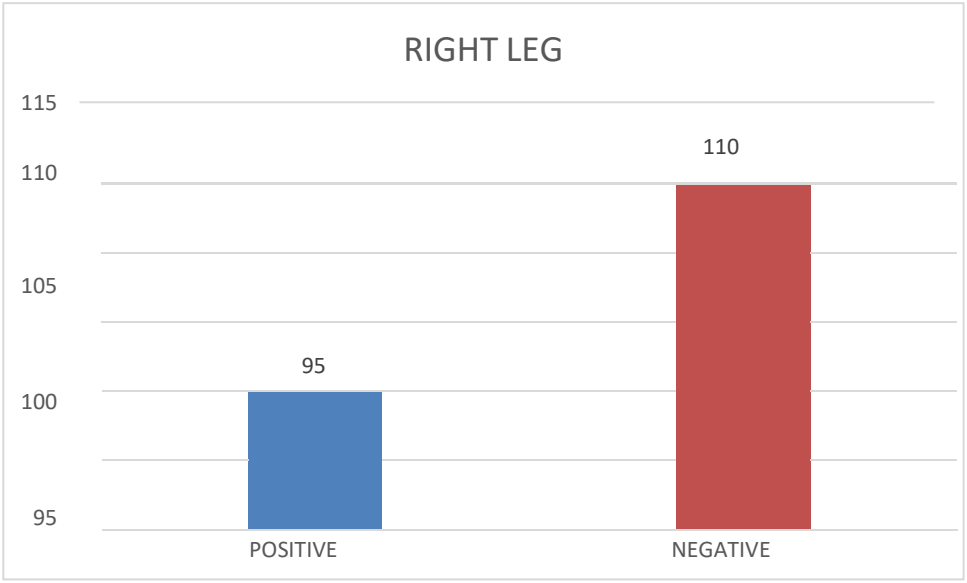
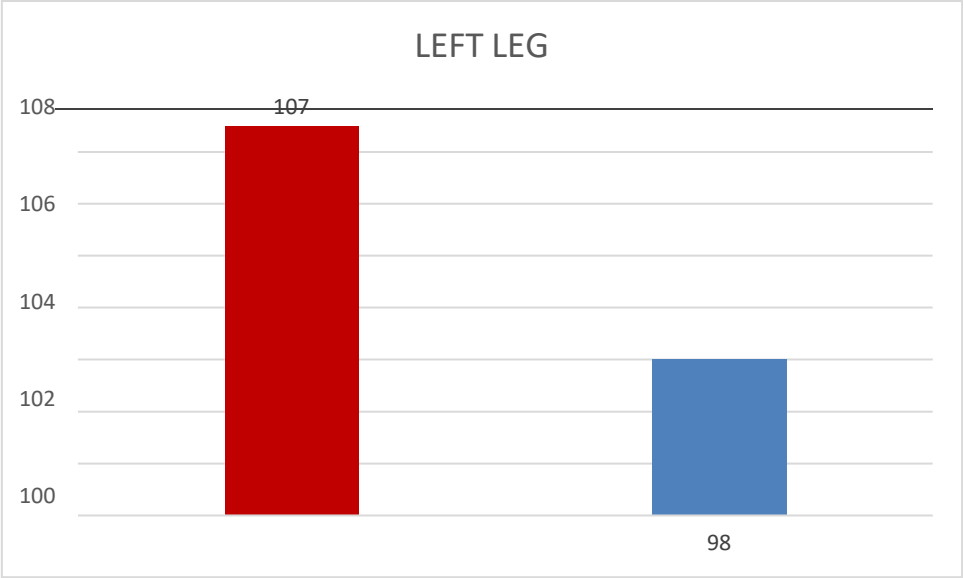
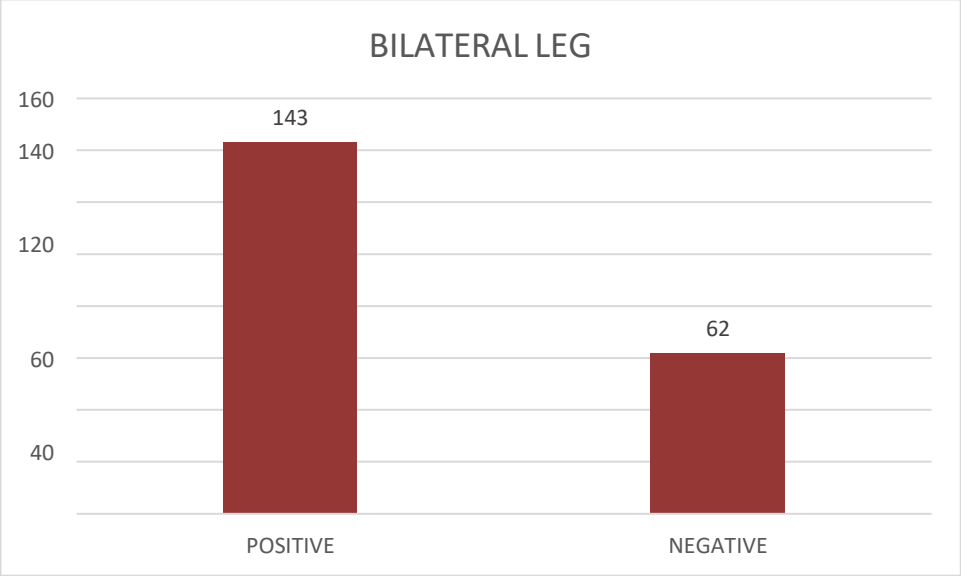


GRAPH 1: Shows the graphical representation of positive and negative values of Rightleg



GRAPH 2: Shows the graphical representation of positive and negative values of Left leg



GRAPH 3: Shows the graphical representation of positive and negative values of Bilateralleg

RESULT

In this study we analyzed the Iliotibial band tightness among college students based on the Ober's test. In that we measured the Iliotibial band flexibility by using Ober's test on both sides, in Right leg 46.3% positive, in Left leg 52.2% positive and in Bilateral side 69.8% positive. Hence, the study results that Iliotibial band tightness was more in bilateral leg.

DISCUSSION

This study showed that the Prevalence of Iliotibial band tightness among college students. There is no such study was conducted to assess the consequence of Iliotibial band tightness among college students for both male and female with the age group 18-25 years.

In this study total 205 populations were included out of that 114 subjects were female and remaining 91 subjects were male population.

Test were carried out such as Ober's test which were conducted among 205 subjects. For this study population includes college students and prolonged sitting subjects minimum of5 to 6 hours per day. They were evaluated according to the age, gender and BMI.

Ober's test was performed to assess the Iliotibial band tightness. According to age, >20 years 43.2% positive in right leg, 43.9% positive in left leg and 39.9% positive in bilateralleg. <20 years 56.8% positive in right leg, 56.1% positive in left leg and 60.1% positive in bilateral leg.

According to gender, female has 114 subjects in that 48.4% positive in right leg, 44.9% positive in left leg and 49% positive in bilateral leg, whereas male has 91 subjects in that 51.6% positive in right leg, 55.1% positive in left leg and 51% positive in bilateral leg.

According to BMI, normal has 52.6% positive in right leg, 53.3% positive in left leg and 54.5% positive in bilateral leg.

In obesity, 9.5% positive in right leg, 11.2% positive in left leg and 9.1% positive in bilateral leg.

In overweight, 17.9% positive in right leg, 18.7% positive in left leg and 18.2% positive in bilateral leg.

In underweight, 20% positive in right leg, 16.8% positive in left leg and 18.2% positive in bilateral leg.

Ober's test was assessed in the right leg, in that 95 subjects were positive with 46.3%.In left leg 107 subjects were positive with 52.2%, whereas in Bilateral leg 143 subjects were positive with 69.8%

Even normal BMI individuals having the Iliotibial band tightness then the underweight, overweight and obese individual.

Kirk KL et al. (2000) conducted a study, on current research clarified high prevalence 43% of Iliotibial band tightness in bankers due to prolonged sitting. Investigationsof a previous study revealed that incidence of this syndrome ranges from 16% to 52% [15]

Hence, it is mandatory to do Iliotibial band stretching exercise for college students in order to prevent dysfunction of lower limb.

LIMITATIONS:

1.In this study Iliotibial band tightness were analyzed using clinical test not using any other equipment

2.The study duration period was limited up to 3-4 weeks

3.The age group is between 18-25 years only

4.The study is to analyze the Iliotibial band tightness among college students only

5. It is a non – invasive measure of clinical test

CONCLUSION

Based on the statistical data and result it was concluded that there is a presence of Iliotibial band tightness among college students with 69.8% positive with the sample size of 205. The tightness over the both sides of Iliotibial band were more than the left and right among the students.

RECOMMENDATION:

1.Muscle length can be measured

2.Iliotibial band tightness can be analyzed with various population along with students, participants in Athletes, Desk job workers, Long standing job workers,Industrial workers, Health care professionals and Agricultural labours

3.The same study can be carried as an 'experimental study' by improving the Iliotibial band tightness by giving stretching exercise

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