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PREVALNCE OF ILIO-TIBIAL BAND TIGHTNESS DUE TO PROLONGED SITTING STUDENTS IN GC UINVERSITY LAYYAH CAMPUS

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ABSTRACT

BACKGROUND- *An observational study was conducted on 169 university-going students experiencing ilio-tibial band tightness due to prolonged sitting.*

METHOD- *Data was collected from, GC University Layyah campus. The duration of this study was six months. 169 participants aged between 22-32 years were selected based on inclusion and exclusion criteria. Ober`s test and Thomas test was applied for ilio-tibial tightness.*

RESULT- *In our study, 40% of males and 59.3% of females showed positive prevalence. It shows they had ilio-tibial band tightness. An ilio-tibial band tightness also affected their daily routine activities, recreational activities, and hobbies as well. Our p values are <0.001 which shows our results are significant. Analysis was done on SPSS version 2022. SPSS data includes descriptive statistics of mean, standard deviation, frequency, and percentage. The result showed that 40% of male and 59.3% of female has ilio-tibial band tightness.*

CONCLUSION- *Our study proved that females have a higher chance of ilio-tibial band tightness than males. Modified Ober`s test and modified Thomas can also be used.*

INTRODUCTION

Ilio-tibial band is described as a long, dense band of fascia or also called as connective tissues that are present along the lateral side of our thigh, from hip joint to knee and shinbone (1). Fascia is described as a sheath that encloses muscles, connects a muscle to bone and also categorize the muscles that serve a similar function. Ilio-tibial band is the largest piece of fascia in human body. Ilio-tibial band is composed of collagen fibers. Collagen is the strongest protein. For good force absorption with weight bearing activities, this collagen fiber is aligned in vertical manner (1).

Ilio-tibial band has ability to shift anterior/posterior with knee flexion and extension because it has no bony attachment along femur. There are two layers of fascia that constitutes the ilio-tibial band. Preliminary or outer layer is the superficial later that constitutes the major tendinous part of ilio-tibial band. It got

inserted into the antero-lateral side of tibia commonly known as the Gerdy's tubercle. Beneath this is the second layer which is also known as the deep later of ilio-tibial band, which got insertion on the distal femur by inter-muscular septum of distal femur. There is a small notchy space that is present between the lateral epicondyle of femur ilio-tibial band. Basically the synovial extension of the knee joint makes this recess (6).

Ilio-tibial band got origin from anterolateral side of iliac tubercle that is the landmark on the outer part of iliac As discussed above the insertion of ilio-tibial band is on two points One on the lateral tibia via Gerdy's tubercle and other on femur via muscular septum (2). The proximal part of ilio-tibial band is formed by the tendinous part of three muscles of hip and thigh. These three muscles include gluteus maximus that work with some other group of muscles to extend and externally rotate the hip (3). Gluteus medius, the second one is a pelvic stabilizer muscle which is responsible to provide balance to femur during frontal plane and transverse plane movements (4). Last one is Tensor fasciae lata which performs the movements of extension and lateral rotation of leg on knee joint (5).

The ilio-tibial band ITB originates from the tubercle on the outer lip of the iliac crest, specifically the anterolateral iliac tubercle. It then extends downward along the lateral side of the thigh and inserts into Gerdy's tubercle, which is located on the lateral condyle of the tibia.

This band`s function includes providing help in extension, abduction and lateral rotation of hip proximally. On distal side its function is based on position of knee joint and it preform two movements. First movement includes full extension to twenty to thirty degrees of flexion. In this position knee extensors are active and ilio-tibial band is located anterior to lateral femoral epicondyle. Second movement is twenty to thirty degrees of flexion to full flexion. Active movement is performed by knee extensors while Ilio-tibial band is lying posteriorly relative to lateral femoral epicondyle in this position (7).

Ilio-tibial band receive blood supply from two arteries, one is the superior gluteal artery and second is the lateral femoral circumflex artery (ascending branch). Tensor fasciae lata give tendinous contribution in forming ilio-tibial band thus both received the same blood supply.

Ilio-tibial band nerve supply involves superior gluteal nerve and inferior gluteal nerve as it shares innervation of TFL and gluteus maximus muscle (8).

There are certain clinical conditions that occur as result of ilio-tibial band dysfunction. The tightness of ilio-tibial band is most commonly observed in those who have prolonged sitting routine. Injury is observed in those individual who frequently perform the movements which involve Ilio-tibial band like in marathon runner, athletes, cyclists etc. Another important factor to be discussed here is the anatomical location of the certain dysfunction that determine the different conditions due to ilio-tibial band dysfunction. As the snapping hip syndrome is a proximally based condition of Ilio-tibial band dysfunction (9), while the Ilio-tibial band syndrome is distally based ilio-tibial band condition (8).

Snapping hip syndrome (saltans or dancer's hip) is a clinical condition that is characterized by a snapping sense or sound while the person the hip Joint. The underlying structure that cause to snap during movement originates the classification of snapping. Major causative structure can be either intra articular or extra articular. Based on these structures the classes are intra articular snapping and extra articular respectively. The extract articular snapping is further categorized as the external snapping hip and internal snapping hip. Prior one is caused during the hip movements (flexion, extension and internal rotation), and during this the ilio-tibial band moves over greater trochanter of femoral head. Internal hip snapping occur during iliopsoas tendon contact either with the anterior part of femur or bony prominences of ileopectineal part (7).

Ilio-tibial band syndrome is the other condition of ilio-tibial band dysfunction that is most commonly observed in patients with cerebral palsy and polio virus (8). It is also highly prevalent in the physically active individuals, more likely to use the lower extremity and continuous motion of hip and knee joint present in their daily routine. Ilio-tibial band is often described as the tenderness or pain when

lateral part of knee or in some cases lateral thigh are palpated. Its major symptom is pain on medial aspect of knee especially when heel strikes floor. It radiates into lateral thigh or calf. Its aggravating factors are running and descending the stairs (5).

Ilio-tibial band tightness is use to assess by using Ober's test and Thomas Test. To perform Ober`s test patient lie on the asymptomatic side. The symptomatic limb is on the upper side facing examiner. After the accurate positioning the examiner flexes the knee passively (approximately up to 90 degrees) followed by flexed and abducted position of hip passively by examiner. The positive test is indicated when the hip remain in same position even after examiner leave the support. Also the examiner assess the flexibility of the joint during this process (Figure 6).

The second diagnostic test is Thomas test. Thomas test basically use to assess the tensor fascia late (TFL) but as described above that the tendinous portion of TFL makes ilio-tibial band so this test is included in our study. For the Thomas test the assessment patient lie on couch edge in supine with flexed knee and hip of symptomatic side Patient is asked to hold the affected in flexed position and pull it close to the chest. Therapist examines the unaffected leg whether it raises with the affected leg or not. If unaffected leg is also raised then the interpretation of test is positive otherwise negative.

Treatment of ilio-tibial band depends on extent of injury. In the case of acute tightness RICE (rest, ice, compression, and elevation) is recommended by doctors. Medicines like ibuprofen or naproxen can be used. Preventions include taking a break from training or exercise for some days, purchasing ortho shoes or specially designed customized and avoiding descending movements. When pain and swelling subsides then physical therapy is encouraged and added in rehabilitation program to improve ROM and flexibility. Stretching exercises and strength training exercises are performed by therapist to relieve the symptoms. Stretching exercises include gluteal stretches, deep quad stretches, Ilio-tibial band stretch and cross-body stretch. When pain is relieved, strength training exercises are performed by therapist. These exercises help to strengthen the muscles. The strengthening exercises which help to reduce pain and Ilio-tibial band syndrome symptoms include Standing hip motions, Pistol squats, Hip hikes, Hip thrusts, Forward and side lunges (6).

LITERATURE REVIEW

Many studies have been conducted in the past regarding prevalence of ilio-tibial band tightness in prolonged sitting subjects. Following are details of such studies:

Michael S. Puniello (1993) conducted a study of Ilio-tibial band tightness and medial patellar glide in patients with patellofemoral dysfunction. In this study 17 patients presented with patellofemoral dysfunction. To test the ilio-tibial band, Ober's test was applied. Twelve patients presented with ilio-tibial band tightness and presented with hypo-mobility of the patella. Out of seventeen participants, three patients had normal patellar mobility with a normal Ober's test. Whereas two patients had decreased medial glide of the patella, with a normal Ober's test. This study explains the relation between the tightness of the ilio-tibial band and decreased medial glide of the patella. (10)

Amir M Arab et al (2010) studied the relationship between the strength of the hip abductor muscle and Ilio-tibial band tightness in individuals with low back pain. A cross-sectional study was conducted with 300 subjects with and without low back pain. Age between 20 and 60 was selected. All the subjects were divided into three groups. The First group includes participants with low back pain with Ilio-tibial band tightness. The second group includes participants with low back pain without Ilio-tibial band tightness. Whereas the third group includes participants who had no low back pain. In all participants, the hip abductor muscle strength was measured. Participants with low back pain with and without Ilio-tibial band tightness showed no difference in the hip abductor muscle strength. (11)

Ankita Mane et al (2020) conducted a consecutive study on the topic of ITB band tightness with

prolonged sitting subjects. 60 participants between the age group of 20-6- years were selected. All the participants were working for 7 hours or more per day. In this study, 42% of females and 58% of males were included. Ober's test, sit and reach test and straight leg raise test were performed. The results of these tests showed Ober's test was positive in 47% of participants who had a duration of sitting for more than 6-7 hours. The straight leg raise test was positive in 42% of participants. 53% of participants have fair flexibility according to, sit and reach test. The conclusion includes a 47% of prevalence of ilio-tibial band tightness in subjects who were being sedentary for more than 7 hours per day with a p-value of <0.0001. (12)

Paras a Bhura et al, (2014) conducted a study on the topic of Ilio-tibial band tightness in postural low back pain. The two groups were included. The first group consists of 100 subjects with low back pain. The age group of 20-45 years was evaluated. Whereas the second group includes 100 normal healthy individuals. The bilateral ilio-tibial band tightness of both groups was assessed by using Modified Ober's test. Whereas this study showed a direct relation between ilio-tibial band tightness and postural low back pain. This study showed participants with low back pain also have ilio-tibial band tightness. (13).

Seung-min Baik et al, (2019) conducted a cross-sectional study on individuals with tight Ilio-tibial bands. To observe the changes in hip abduction angle and vastus medialis activity, after applying the modified Thomas test. Twenty-one subjects with tight Ilio-tibial band were evaluated. A modified Ober`s test was performed during measuring hip adduction. The result showed the range of hip adduction increases in the modified Ober`s test. Whereas after applying the modified Thomas test hip abduction decreases. This study demonstrates that ilio-tibial band stretching during the modified Thomas test can be used as an interventional method. This interventional method helps to improve ilio-tibial band flexibility. Whereas it also improves vastus medius muscle activity in individuals with tight ITB. (14)

Taylor Moore in 2014 conducted a case report. This case report description included a triathlete of 24 years of age. That triathlete had severe pain in the ilio-tibial band. Objective outcome measures of this case report include the Ober`s test. Discussion of this case report includes a patient who had Ilio-tibial tightness syndrome and presented with relief in pain and an increase in function. (15)

Nancy B. Reese et al, conducted a Test-retest design study on the topic of the Use of an Inclinometer to Measure Flexibility of the Ilio-tibial Band Using the Ober`s Test and the Modified Ober`s Test. Sixty-one subjects with a mean age of 24 years were selected. The hip adduction of all participants was measured by using the Ober`s test (knee at 90° of flexion) and the modified Ober`s test (knee extended). This study shows that the use of an inclinometer to measure hip adduction by using the Ober`s test and the modified Ober`s test is more effective method to measure IT band flexibility. The modified Ober`s test allows greater hip adduction range of motion than the Ober`s test. (16)

Brain Noehren et al, 2014 conducted a cross-sectional study on the mechanics of Ilio-tibial band syndrome in men. 34 men were evaluated. Whereas 17 participants were healthy, and 17 presented with ilio-tibial band syndrome. Ilio-tibial band length was assessed by the Ober`s test. The results of this study were compared with the control group. Participants with ilio-tibial band syndrome presented with lower Ober`s measurements. The conclusion of this study only suggests interventional strategies. The results focused on neuromuscular intervention can be applied to participants with ilio-tibial band syndrome. (17)

Vims Journal 2020 conducted a study of hamstring and ilio-tibial band tightness in non-specific low back pain patient. The study was based on 60 college going students who were experiencing low back pain of mild to moderate range. This study showed that Tightness of hamstring and ilio-tibial band was observed by performing hamstring test and Ober's test respectively. The results of this study showed that, 58.33% male and 95.85% female have hamstring muscle tightness. 16.66% Male and 22.91% female have IT band tightness. Hamstring muscle

tightness was more observed (85%) than ilio-tibial band tightness (21.66%) in individuals who were participating in this study. (18)

Nicholas A Cooper, Kelsey M Scavo, et al (2016) conducted a study of prevalence of gluteus medius weakness with chronic low back pain compared to healthy individuals. This study showed the effects of ilio-tibial band stretching on pain and function with unilateral osteoarthritis of knee .This study was conducted on 150 subjects with chronic non-specific LBP. Gluteus medius is weaker in people with LBP compared to controls or the unaffected side. The Trendelenburg sign is more prevalent in subjects with LBP than individual. There tenderness over the gluteals, greater trochanter, and paraspinals are more palpable in people with low back pain. (19)

This study was conducted by Shogren et al (2016) and this experiment examined on 32 participants. The main purpose of this study was to examine the effectiveness of lumbar manipulation with ilio-tibial band (ITB) strengthening exercises. ITB stretching and strengthening exercises for reducing ITB tightness. This study consist of 32 physical therapy students aged 18-40, who were randomly divided into three groups. Group 1 was assigned to perform ITB strengthening exercises for 8-weeks. Group 2 was assigned ITB strengthening exercises and ITB stretching for 8-weeks. Group 3 served as the control. This suggests that both manipulation and stretching interventions with hip strengthening may be beneficial for a patient presenting with ITB tightness. (20)

Bizzini et al (2003) conducted a study to evaluate the tightness of Ilio-tibial band. This study consists of 24 subjects in which they evaluated the Tightness of the ilio-tibial band. The Ober`s test was conducted on both legs of each participant. The ilio-tibial band (ITB) plays an important l role in movement and can become tight if overused. In this study one of the method of dry cupping was applied in order to alleviate pain, reduce tightness, and promote healing. 40 participants were observed, included 17 males, 23 females. The age of the participants was 21to 30 years. The main aim of this study was to reduce the ilio-tibial band tightness participants were placed in a side-lying position with pillow between slightly bent knees. This study pointed that a single treatment of dry cupping is likely effective in reducing ITB tightness and increasing hip flexion. This study supported that dry cupping was safe and effective treatment of the ilio-tibial tightness. (21)

Scavo in 2016 studied about the pain due to arthritis. Osteoarthritis is the second most common disease with prevalence of 22% to 39% in India. This study was conducted on 31 patients with unilateral knee osteoarthritis who were divided into two groups. Physiotherapy treatment was applied on each group. The main aim of the study is to find the effect of ilio-tibial band stretching on pain and function in which patients with osteoarthritis. Both these groups were assessed before and after the treatment. This study determine the level of pain and functional limitation by using Numeric pain rating scale (NPRS) respectively. At the end of 4 weeks, the patients in the both groups showed decreased in pain and improvement in function. But interventional group showed statistically significant improvement in function and reduces the tightness of ilio-tibial band. (22)

2.1: Objective(s)

1. To assess the participants for ilio-tibial band tightness on the basis of subjective history and inclusion and exclusion criteria
2. To perform objective tests on the participants to identify the ITB tightness.
3. To assess the prevalence of the ITB tightness in the students having routine of prolonged sitting.

2.2: Hypothesis

2.2.1: Null Hypothesis:

The effect of prolonged sitting and immobility on tightness of ilio-tibial band in students of GC University Layyah campus.

2.2.2: Alternate Hypothesis:

Prolonged sitting and immobility do not cause any tightness in ilio-tibial band in students of GC University Layyah campus.

MATERIAL AND METHODS

3.1: Study design:

The design of the study was Cross-sectional prevalence study.

3.2: Setting:

Data was collected from, GC University Faisalabad Layyah, Campus.

3.3: Study duration:

Six months after the approval of synopsis.

3.4: Sample Size:

The sample size was 169.

Sample size for a prevalence survey, with finite population correction

Precision	5	%	
Prevalence	50	%	Enter 50 if unknown
Population	300		Enter 0 if unknown
Level	95	%	Level of the confidence interval

Calculate Clear

Sample size results

```
Assumptions:

     Precision           = 5.00  %
     Prevalence          = 50.00 %
     Population size     = 300

        95% Confidence Interval specified limits [  45%   --   55% ]
        (these limits equal prevalence plus or minus precision)

Estimated sample size:
                    n =      169
```

http://sampsize.sourceforge.net/iface#prev

3.5: Sampling technique:

The Random Sampling technique has been used.

3.6: Sample Collecting Method:

Survey, Questionnaire

3.7: Inclusion and Exclusion Criteria:

3.7.1: Inclusion Criteria:

1. Subjects who are sedentary for minimum 7 to 8 hours in a day.
2. Age group should be between 22to32.
3. Both Male and Female Students will be considered.
4. Normal, Healthy individuals will be included.

3.7.2: Exclusion Criteria:

1. Recent Fractures of lower limb.
2. Any other pathology in lower limb.
3. Decrease ROM due to stiffness in knee and ankle.
4. Any soft tissue injury of lower limb
5. NO surgical procedure was performed on ITB previously.

3.8: Data collection Tools:

- Survey Questionnaire
- NPRS
- Ober's Test
- Thomas Test

3.8.1: Couch

Couch used for the performing of the test e.g. Ober's Test.

3.8.2: Numeric Pain Rating Scale

The Numeric Pain Rating Scale (NPRS) is a one-dimensional outcome measure used to assess pain intensity in adults, including those who suffer

from chronic pain caused by rheumatic conditions. The NPRS represents a numbered version of the visual analog scale (VAS), where the person rates their pain by choosing a whole number between 0 and 10 that best matches how strong their pain feels.

The most commonly used design is a horizontal bar or line. Like the VAS, the NPRS has descriptive words at each end that indicate the extremes of pain severity.

Scoring:

- 0 No pain.
- 1–3 Mild pain.
- 4–6 Moderate pain.
- 7–10 severe pain.

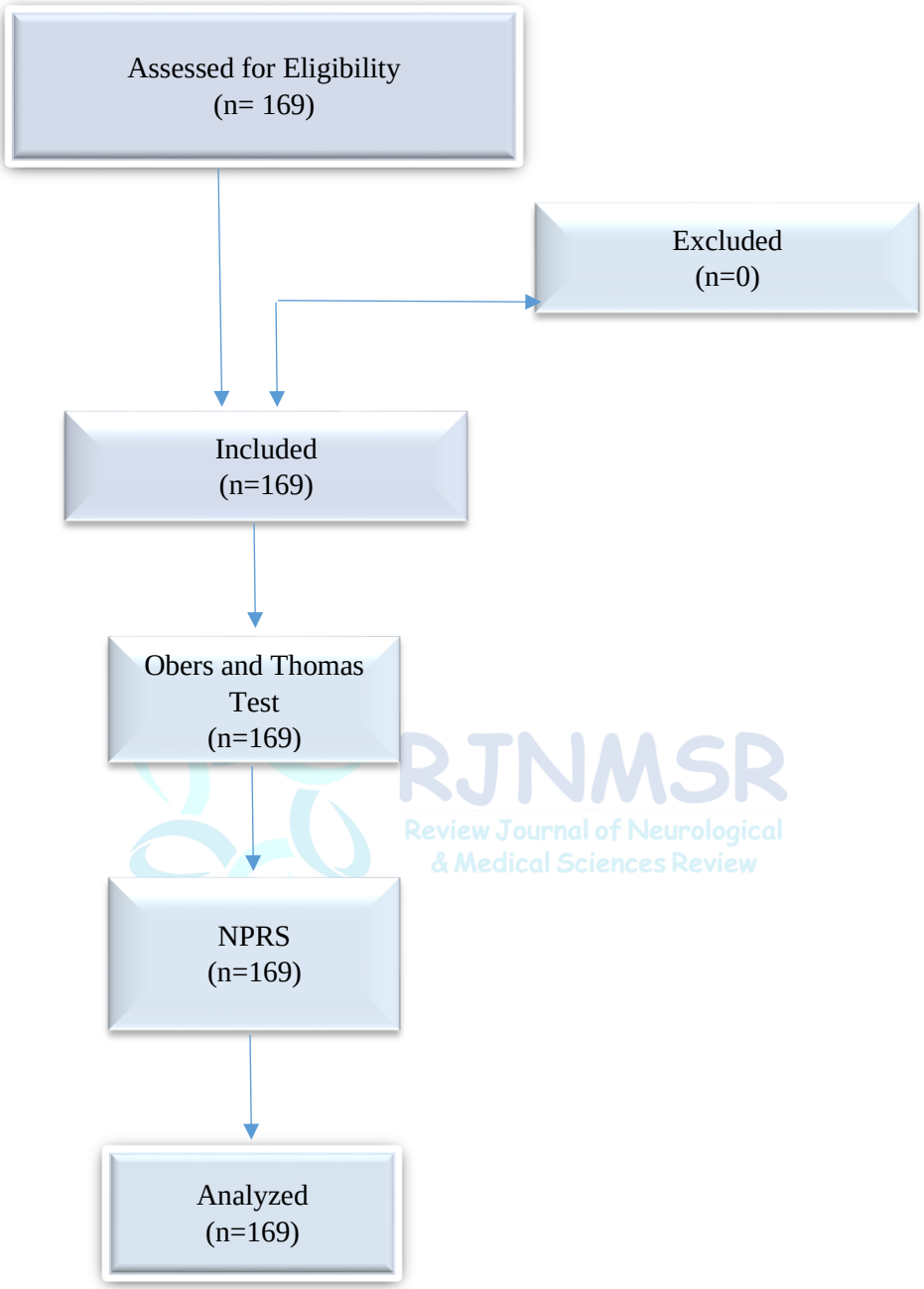
3.9: Data Analysis Procedure

- Consent form
- Couch
- Questionnaire
- Participants with inclusion criteria

3.10: Ethical Consideration

1. The rights of the research participants will be protected, and the ethical guidelines established by the GCUF Layyah Ethical Committee will be strictly followed throughout the study.
2. All participants will be required to sign written informed consent forms, which are attached with the synopsis.
3. All data collected during the study will be kept confidential and will be used only for research purposes.
4. The identity of all study participants will remain anonymous, and no personal identifying information will be disclosed.
5. Participants will be informed that the study involves no physical, psychological, or social risk, as it is based on a questionnaire survey only.
6. Participants will also be informed that their participation is voluntary, and they are free to withdraw from the study at any time without any penalty or consequences.

3.10: Consort Flow Diagram



RESULTS

Table no. 2 shows a numeric pain scale evaluation with its mean and standard deviation. The frequency and percentage are given in the table. 169 participants were evaluated. The mean value was 1.81, the standard deviation value is 1.55 and the p-value is <0.00 which shows that our result values are significant.

Table no. 3 shows the effect of limping caused by the ilio-tibial band during walking. It also shows the value of the mean and standard deviation. The frequency and percentage are given in the table. The total number of subjects was 169. The mean was 0.79, whereas the value of the standard deviation was 0.83 and the p-value is <0.00. Which shows that our result values are significant.

Table no. 4 shows the mean and standard deviation value between two variables one is the NRS pain scale and the other variable is ilio-tibial band cause limping during a walk. The total number of subjects was 169. The mean of ilio-tibial band cause limping during a walk was 0.79, the standard deviation was 0.83 and the mean of the NRS pain scale was 0.81, the standard deviation was 1.55 the p-value is <0.00 which shows that our result values are significant.

Table no.5 shows the duration of pain experienced by participants while walking. This table explains how much distance they can cover without experiencing any kind of pain. The frequency and percentage of pain is given in the table.

Table no. 6 indicates chi-square test performed for two variables i.e age and Ober`s test. Chi-Square test is a non-parametric test performed for prevalence studies. Age value observed was 136.587 and Ober`s test value observed was 34.560. P value is 0.000 which indicated that our result values are significant.

Table no. 7 indicates that the evaluation of Thomas and Ober`s test. The mean and standard deviation values for both are given that are 0.82 and 0.385 respectively for Thomas test. While for Ober`s test mean and standard deviation values observed were 0.74 and 0.440 respectively. 82% subjects results were negative for Thomas test which means that they did not observed ilio-tibial band tightness. On the other hand, for Ober`s test only 26% subjects presented with ilio-tibial band tightness.

Table no. 8 indicates evaluation of any limitation in descending stairs. Mean and standard deviation values are 0.80 and 0.835 respectively. Frequency and percentage are shown in table.

Graph no 1 is a bar graph. This bar graph shows the effect of limping caused by ilio-tibial band during walking. The blue bar indicates individuals who have never experienced any kind of pain. The bar colored orange indicates individuals who were suffering pain occasionally. The Grey bar indicates individuals who experienced pain frequently. Whereas, Yellow bar indicates those individuals who felt pain most of the time.

Graph no 2 is a pie graph. This pie graph shows the percentage of pain experienced by participants during hobbies, recreational, and sports activities. This pie graph shows how activities were affected by ilio-tibial band tightness. The blue bar indicates no pain was experienced during any activities. The orange bar shows slight pain experienced during any activities. Whereas the grey bar indicates moderate pain experienced by participants during any activities

Graph no 3. Indicates evaluation of Thomas and Ober`s test results. Blue and orange portion represents positive and negative test results of Thomas test. While grey and yellow indicated positive and negative test results of Ober`s test respectively.

Table no.1 Frequency table of the NRS pain scale

NRS evaluation	NRS pain scale	
	frequency	Percent
0	33	22.0
1	33	22.0
2	50	33.3
3	11	7.3

4	16	10.7
5	4	2.7
6	1	0.7
8	2	1.3
Total	169	100

Table no .2 Frequency table of ITB causing limping during a walk

ITB cause limping during a walk		
No of times pain experienced	**Frequency**	**Percent**
Never	64	42.7
Occasionally	60	40.0
Frequently	19	12.7
Most of time	7	4.7
Total	169	100

Table no.3 Mean and Std. deviation of NRS pain scale and ITB cause limping during a walk

	NRS pain scale	**ITB cause limping during a walk**
Mean	1.81	0.79
Std. deviation	1.55	0.83

Table no.4 Frequency table time duration of pain experienced while walking

Time duration of pain experienced	**Frequency**	**Percent**
Longer than 30	71	47.3
15-30 minutes	68	45.3
5-15 minutes	7	4.7
Less than 5 minutes	4	2.7
Total	169	100.0

Table no.5 Chi-Square Test For Age and Ober`s Test

Chi-Square test for age and Ober`s test	**Age (22-32)**	**Ober`s test**
Chi-Square	136.587	34.560
p-value	0.000	0.000

Table no.6 Thomas and Ober`s Test Evaluation

Evaluation of Thomas and Ober`s test	**Thomas Test**		**Ober`s Test**	
	Frequency	**Percent**	**Frequency**	**Percent**
Positive	27	18	39	26
Negative	123	82	111	74
Total	169	100	169	100
Standard Deviation	0.835		0.440	

Mean	0.82	0.74

Table no.7 Any Limitation in Descending Stairs

Any Limitation in Descending Stairs		
	Frequency	Percentage
Male	61	40.7
Female	89	59.3
Total	169	100.0
S.D	0.835	
Mean	0.80	

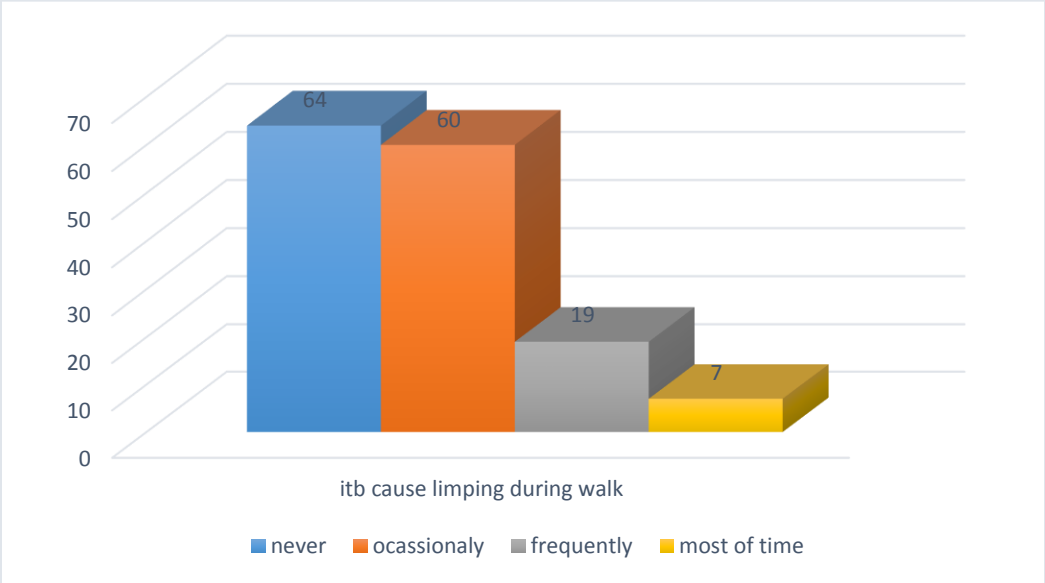


Figure no. 1 ITB cause limping during walking

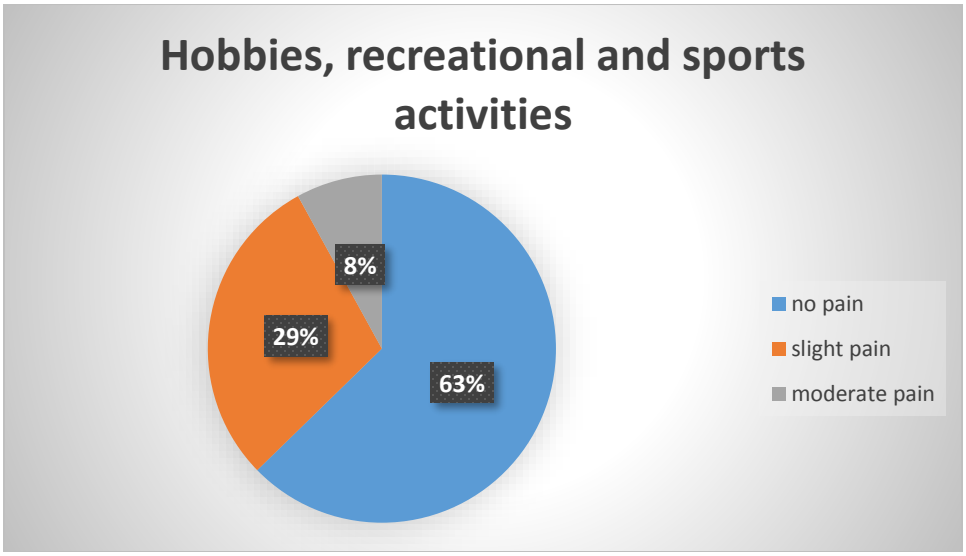


Figure no. 2 Hobbies, recreational and sports activities with pain

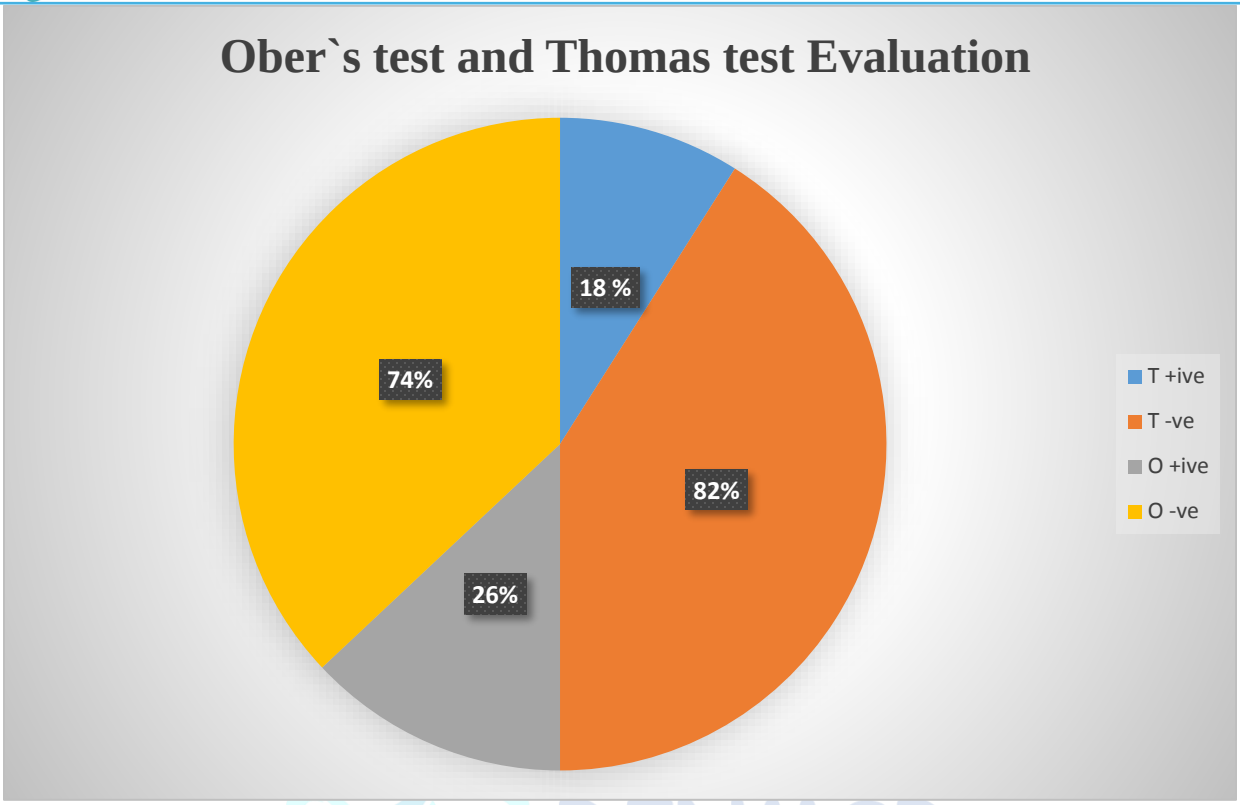


Figure no. 3 Ober`s and Thomas Test Evaluation

DISCUSSION

This study was an effort to calculate the prevalence of ITB tightness due to prolonged sitting in students. 150 participants aged between 22-32 years were selected based on inclusion and exclusion criteria. Ober's test and Thomas's test were applied to check the tightness of ITB in students. The mean value of the applied Thomas test was 0.385 and the mean value of Ober's test is 0.74. The result showed that 26% showed positive Ober's test and 74% showed negative Ober's test. 18% showed positive Thomas test and 82% showed negative Thomas test. 40% of males and 59.3% of females showed positive prevalence. It shows they had tightness in ITB and ITB tightness also affected their daily routine activities, recreational activities, and hobbies as well. It also caused limping which affected their descending stairs. Our p values are <0.001 which shows our calculations are significant. Our study proved that females have a higher chance of ITB tightness than males.

Iqra Arif et al, 2022 conducted a prevalence study on office workers who had ilio-tibial band tightness. In this study, 383 office workers were evaluated. Ober's test was performed to check ilio-tibial band tightness. Out of 383 participants, 175 had ilio-tibial band tightness which further includes 68 females and 107 males. Whereas 208 showed negative Ober's test. The p-value was <0.05. She concluded office workers had a greater chance of ilio-tibial band tightness, especially in males compared to females. As this study supports our research. In our study, we also applied Ober's test with Thomas test to check ilio-tibial band tightness. (23)

A Deshmukh et al, 2020 conducted a prevalence study on the hamstring and ilio-tibial band tightness in patients with nonspecific low back pain. Total of 60 students was evaluated, 48 females and 12 males were selected. This study explains the effect of ilio-tibial band tightness on participants with mild low back pain. The specialized test used in the study includes Ober's test for ilio-tibial band tightness, 90-90 SLR, to check hamstring tightness. Results showed that 21.66% have a tight ilio-tibial band and there was no specific relation between ilio-tibial and back

pain. In this study, they applied only Ober's test to check ilio-tibial band tightness. In our study, we also applied Ober's test plus Thomas test to check ilio-tibial band tightness. (24)

A study was conducted by Eric J et al (2020) which describes that ilio-tibial syndrome is a common overuse injury mostly seen in runners, cyclists, and military recruits. Patients presented with complain of knee pain related to continuous activities. The diagnosis of the patients were made on the bases of characteristic history and physical examination. There are many studies had been designed for ilio-tibial band syndrome, containing friction of the joints? The ilio-tibial band tightness treatment is nonsurgical; however, in persistent or chronic cases, surgical management is occur. (25)

H Bates Noble, Michael R Hajek, et al (1982) conducted a study which shows that Ilio-tibial band friction syndrome (ITBFS) was caused by overuse of joints. It occur mostly in runners. Ober`s test was performed for ilio-tibial band tightness assessment. When Ober's test is positive, the patient was prescribed to start a series of stretching exercises. These exercises have been performed to improve symptoms of ITBFS and prevent their reoccurrence. In this study we also investigated the relationship between ilio-tibial length and lateral patellar involvement in hip adduction. (26)

This study was conducted by H Rich Tenney, Kyndall L boyell et al in 2013 in this study they described the Influence of hamstring and abdominal muscle activation. This study showed that positive Ober's test was experienced in subjects who were suffering of lumbopelvic pain. The effect of hamstring and abdominal activation on pain levels was measured by the Numeric Pain Scale (NPS) and hip range of motion as measured by Ober's Test in people with lumbopelvic pain. In this study 13 participants with lumbo-pelvic pain with positive Ober`s test to rebuild posture. Specific exercises which shows that improve Ober's test measurements among hamstrings and abdominal muscles appear immediately and reduce pain as measured by the NRS in people with lumbo-pelvic pain. Ober`s test is effective to assess the pain level. (27)

5.1: Conclusion

In our study, 40% of males and 59.3% of females showed positive prevalence. It shows they had ilio-tibial band tightness. An ITB tightness also affected their daily routine activities, recreational activities, and hobbies as well. 169 participants aged between 22-32 years were selected based on inclusion and exclusion criteria. Our p values are <0.001 which shows our results are significant.

5.2: Recommendations

- The duration of study can be one year.
- ITB tightness can also be studied with hamstring tightness.
- By using these parameters case-control study can also be done.
- Modified Ober`s test and modified Thomas can also be used.

5.3: Limitations

- We have used simple Ober's test and simple Thomas test.
- We did not check the pre and post-results of the specialized test.
- The duration of this study was 6 months.
- We did not assess any other hip movement in this study.
- Our study was prevalence study.
- These parameters can also be studies under the umbrella of RCT or case-control stud

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