

REVIEW ARTICLE

VIMSJPT

PREVALENCE OF HAMSTRING AND ILIOTIBIAL BAND TIGHTNESS IN NONSPECIFIC LOW BACK PAIN PATIENTS

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ABSTRACT:

BACKGROUND- An observational study was conducted on 60 college going students experiencing nonspecific low back pain of mild to moderate range [on VAS 2-5]. **METHOD-** Assessment of hamstring and IT band tightness was done by using 90-90 hamstring test and Ober's test respectively. Participant were checked for tightness and marked whether tightness present or not **RESULT-** Analysis of outcomes was done by mean and standard deviation. Result showed that, 58.33% male and 95.85% has female has hamstring muscle tightness. 16.66% Male and 22.91% female has of IT band tightness. 85% population [both male and female] shows of hamstring muscle tightness. While 85 % of male and females both shows hamstring muscle tightness. 21.66% populations [both M and F] shows of IT band tightness . **CONCLUSION-** Study shows prevalence of hamstring and IT band tightness is present in nonspecific low back pain. In participant hamstring muscle tightness is more profound (85%) than IT band tightness (21.66%).

KEY WORDS: 90-90 hamstring test, ober's test, non-specific low back pain, hamstring tightness, IT band tightness

Received 10th June 2020, Accepted 20th June 2020, Published 30th June 2020



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INTRODUCTION:

Muscle tightness is the state of activity or tension of a muscle beyond that related to its physical properties, which is its active resistance to stretch. In skeletal muscle, tonus is dependent upon efferent innervations. The typical pattern of tightness in striated muscles is responsible for the postural function. The tight muscle is readily activated in the usual movement pattern, and the tightness is maintained. The tight muscle is kept strong while the phasic antagonist is weakens. The result is an imbalance around the joints.⁽¹⁾

As the tightness pattern can be predicted, even the imbalance shows a regular pattern. The tightness does not show any characteristically histological or neurological pattern. The muscle is just too short to allow the full range of passive or active mobility. The muscle in lower extremity which are most liable to tightness are gastro-soleus, tibialis posterior, rectus femoris, iliopsoas, tensor fascia lata, the hamstrings and abductors⁽²⁾.

Muscle fibers show a thixotropic behavior. The muscular stiffness is reduced after movements that stretches the muscle fibers and is enhanced after movements that shortens them⁽³⁾.

The iliotibial band is a longitudinal fibrous reinforcement of the fascia lata. The action of the ITB is hip extension, abduction and lateral rotation. The shortening of iliotibial band has been considered to be associated with low back pain⁽⁴⁾. IT band tightness is clinically present in many musculoskeletal patient. A patient had low back and sacroiliac pain that seemed to originate from a dysfunctional iliotibial band. This case illustrate that it is important to consider IT band tightness as a possible cause of low back pain and that proper management need to include stretching of IT band ⁽⁵⁾.

Hamstring muscle is group of three muscles on the back of leg. These hamstring muscles work together to perform hip extension and knee flexion. The hamstring play integral role in most leg movements. There are many things that may cause hamstring tightness. Sitting for prolong period of time shortens the hamstring muscle. The tight hamstring

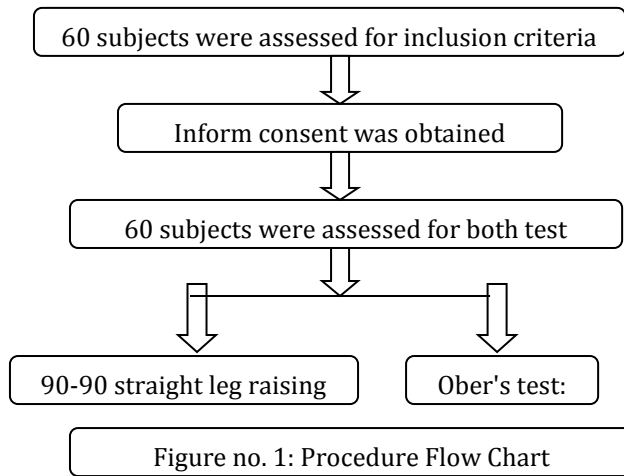
causes a anterior pelvic tilt that causes tightness in the lower back, and a tight lower back of ten results in tight hamstring⁽⁶⁾. Increased hamstring tightness could be a possible contributing factor to low back injuries. Clinical observations have suggested that hamstring tightness influences lumbar pelvic rhythm. Movement restrictions or postural asymmetry likely lead to compensatory movement patterns of lumbar spine, and subsequently to increased stress on the spinal soft tissues and an increased risk of low back pain⁽⁷⁾

Both hamstring and iliotibial band muscle tightness could well be responsible for causing or maintaining back pain by diminishing the lumbar or SI joint range of motion, and through that even the nutrition of the disc^(8,9) and the joint cartilage and ligaments⁽¹⁰⁾.

Now a days most of the people are complaining of low back pain. It is due to sitting for long period of time which shortens the hip flexor. Slouching in chair add to stress. As begin to get up hip flexors pull person forward because of muscle tightness. We can see the changing posture or adapting bad posture in people because to sit for long period and which cause muscle tightness. The more the tightness, the higher the severity of low back pain. For prevention of low back pain which occurs due to tightness of hamstring and iliotibial band. We have to asses it early and start the exercise to prevent low back pain. Hence the study aimed to find the prevalence of hamstring and IT band tightness in nonspecific low back pain.

METHODOLOGY:

An observational study was conducted at Vikhe Patil Hospital Ahmednagar. Study was started after getting institutional ethical committee approval for procedure. Total 60 random participants were asked to participate for study as per inclusion criteria. Each participant was explained about the purpose and procedure of the study in detail and also about the risk in the language they understand. All participants were assessed with their permission and after the signing of consent form. Data were obtained on the basis of, whether they present with hamstring and IT band tightness or not?



VARIABLES	N	AGE	ROM-90-90 hamstring test. (mean)	VAS SCALE
NO OF PATIENTS	60 F(48) M(12)	23.32	Right side-113.2 Left side-113.28	On rest -2.08 On movement-5.38

Table 1: Range of Motion Both Side

1) 90-90 straight leg raising test- Participants were instructed to lay supine on the assessment table. The tested limb was flexed until the hip flexion being at 90° with the table. With the foot in neutral position and the knee flexed at 90°, a standard universal goniometer was placed over the lateral femoral condyle, with one arm aligned along the thigh in direction to the greater trochanter and the other arm aligned over the leg in the direction of the lateral malleolus. During this the contra lateral limb was fully extended and stabilized in neutral rotation by a second examiner, restriction of more than 15° considered as tightness.(10)

2) Ober's test: If we performed measurements on the left leg. The subjects were lying on their right side with their shoulders and pelvis perpendicular to the examining table. In addition, the hip and knee of the right leg were flexed to flatten the low back, therefore stabilizing the pelvis. The left knee was kept in flexion at 90° for the Ober's test and positioned at 0° for the modified Ober test. With each test, the width of the ITT was sequentially measured with the hip in 3 positions to gradually increase hip adduction: neutral, adducted, and adducted with weight.(11).

Recorded data was summarized in the form of mean and standard deviation and statistical data were obtained.

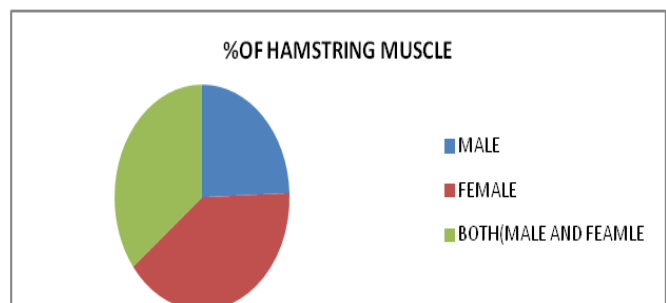
RESULT:

Table number 1 shows there were 60 number patients was taken for project in which 48 were females and 12 were male. The mean age criteria were 23. In 90-90 hamstring test of right side lower limb, mean range of motion (ROM) was 113.2 and left side lower limb (ROM) was 113.28.

Table 2 & Graph 1 showed that, 58.33% male and 95.85% female had the of hamstring muscle tightness. 85% participant (Both male and female) showed the of hamstring muscle tightness.

GENDER	% Of population showing hamstring muscle tightness
MALE	58.33%
FEMALE	95.85%
BOTH(MALE AND FEMALE)	85%

Table 2: Population Showing Hamstring Tightness

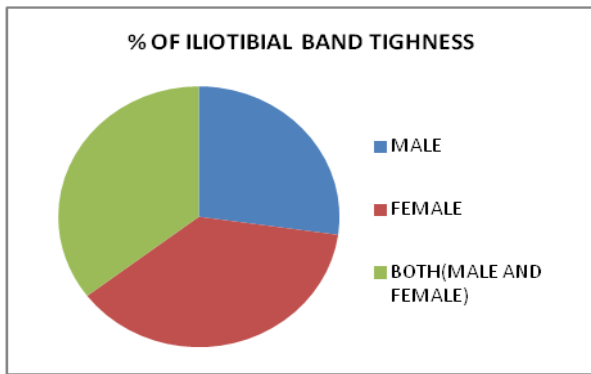


Graph 1: Population Showing Hamstring Tightness

Table no. 3 showed, 16.66% male and 22.91% female had the of iliotibial band tightness. 21.66% of participant both male and female present with iliotibial band muscle tightness.

GENDER	% OF ILIOTIBIAL BAND MUSCLE TIGHTNESS
MALE	16.66%
FEMALE	22.91%
BOTH(MALE AND FEMALE)	21.66%

Table 3: Iliotibial Band Tightness

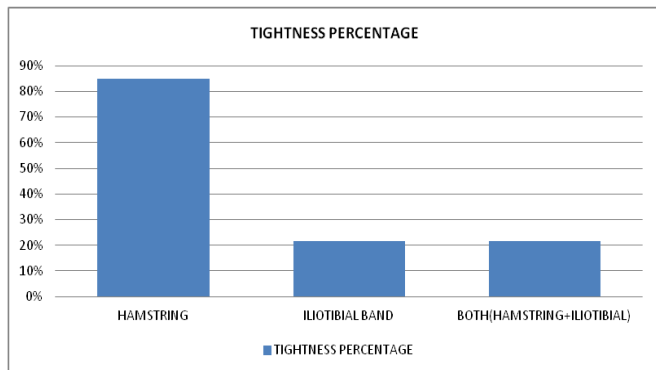


Graph 2: Iliotibial Band Tightness

Table no. 4 & Graph 3 showed, 85% participants present with hamstring muscle tightness in both male and female. 21.66% of male and female shows the iliotibial band tightness. The 21.66% of male and female shows the both hamstring and iliotibial band tightness.

MUSCLE	% TIGHTNESS OF MUSCLES
Hamstring	85%
Iliotibial band	21.66%
Both (hamstring and iliotibial band)	21.66%

Table 4: Both hamstrings & Iliotibial Tightness



Graph 3: Both Hamstrings & Iliotibial Tightness

DISCUSSION:

Among all chronic pain problems and spinal pain conditions, LBP is the most common and important clinical, social and economic, and public health problems affecting the population indiscriminately across the world.

LBP known to be of multi-factorial causes. Employment and workplace factors, both physical and psychological, such as heavy lifting, pushing, pulling, vehicle driving, and prolonged walking or standing were found to be predictors of LBP and there are similar association with stressful and monotonous work and dissatisfaction with work⁽¹³⁾.

This study aimed at finding the prevalence of hamstring and iliotibial band tightness in nonspecific low back pain patients. The aim was fulfilled by taking 90-90 hamstring test and Ober’s test in 60 patients with age, gender and nonspecific low back pain.

The 48 number of female and 12 number of male with non-specific low back pain were included. The mean age criteria of patients were 23. The range of motion (ROM) of right side lower limb mean was 113.2 and left side lower limb mean was 113.28. The visual analog scale was taken to measure the lower back pain intensity. The lower back pain mean was 2.08 on rest and 5.38 on movement.

The 85% hamstring muscle tightness and 21.66% of iliotibial band tightness was present in both male and female. Both muscle (hamstring and IT band) tightness were present in 21.66% of male and female. Hamstring muscle length was significantly reduced in individuals with LBP but it has no significant correlation with pelvic tilt rangenoted by Fabunmi and Adegoke.⁽¹²⁾

Out of 12 male the some patients were showing 58.33% of hamstring muscle tightness and out of 48 females some patients were showing the 95.85% of hamstring muscle tightness. Both(male and female) shows the 85% of hamstring muscle tightness. The hamstring muscle tightness could well be responsible for causing or maintaining low back pain by diminishing the lumbar or SI joint range of motion, and through that even the nutrition of disc, the joint cartilage and ligament noted by Anna Lisa Helsing⁽¹¹⁾. Yi Xiang J. Wang was concluded in there study that the prevalence of low back pain was greater in female than male.⁽¹³⁾

The male showed the 16.66% of iliotibial band muscle tightness and female showed the 22.91% of iliotibial band muscle tightness. Both(male and female) shows the 21.66% of iliotibial band muscle tightness. Increasing tendency of people to spend long hours in sitting position aggravates the low back pain due to shortening of iliotibial band muscle. They found co-relation of Iliotibial band tightness and low back pain noted by Paras Bhura and Camy bhagat⁽¹⁰⁾.

Knowing the prevalence of hamstring and iliotibial band

patient about the postural correction and educate them about the importance of flexibility of muscle. We can educate patients to stretch the muscle to prevent the low back pain. We can educate the patient about what is the importance of physical activity like running, walking and cycling in daily life.

CONCLUSION:

This study concluded that there is a prevalence of hamstring and iliotibial band tightness Is present in patients with nonspecific low back pain. Study also shows hamstring muscle tightness(85%) affects more than the iliotibial band tightness (21.66%).

FUNDING: No funding received.

CONFLICT OF INTREST: None reported.

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How to cite this article:

Aishwarya Deshmukh, Archana Nagargoje, Dr. Abhijit Diwate **PREVALENCE OF HAMSTRING AND ILIOTIBIAL BAND TIGHTNESS IN NONSPECIFIC LOW BACK PAIN PTIENTS. *VIMS J Physical Th. Jun 2020;2(1):28-32***

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