PREVALENCE OF ILIOTIBIAL BAND SYNDROME IN ATHLETES

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Abstract-

Background: Running is still becoming more and more popular, and as involvement rises, sowill the frequency of injuries associated to running. The most frequent injury to the external sideof the knee among runners is iliotibial band syndrome (ITBS), with a 5% to 14% projectedfrequency. More needs to be studied about the genesis, diagnosis, and therapy of ITBS among Runners in order to allow evidence-based care of this ailment.

Objective: - The objective of our study is to calculate the prevalence of iliotibial band syndromein athletes.

Methodology: - A cross-sectional study with athletes is carried out. The four-month trial wascompleted. Using a straightforward random selection method, 421 athletes are evaluated. TheLahore and Gujranwala sports bodies provide the information. Male long jumpers, basketballplayers, athletes in their first season, athletes between the ages of 15 and 40, and things witheither a past or current diagnosis of ITBE are all included in this study.

Conclusion: - Research on the treatments of ITBS in runners has poor methodological quality,and the findings are often contradictory. To avoid selection bias and maximise the generalizability of findings, study designs should be modified. Iliotibial ligament syndrome tends to have a fair long-term outlook, while some runners have repeated problems if they suddenlyincrease their mileage.

Keywords:-Iliotibial band syndrome, Nonsteroidal anti-inflammatory drugs, Athletes.

I. INTRODUCTION

The popularity of running has increased over the past 30 years. About 12.5% of Dutch people, according to the Royal Dutch Athletics Federation (KNAU), participate in regular running, andthe popularity of running competitions is continually rising.1 Running is a cheap type of intensityphysical activity and can be done anyplace and at any time it is also a basic part of many leisureand competitive sports.2 Running, though, can result in overuse injuries, particularly to the legs.The estimated incidence of injuries sustained while running during practice or competition havebeen the subject of numerous studies, with injury rates ranging from 25% to 65%, though collegeathletes have been reported to sustain injuries at a rate of about 51% and soldiers at a ratebetween 20% and 50%.3Running quickly or jogging counts in competitive physical activities thatare performed for enjoyment rather than professionally and contributes to one's health andfitness.[4] A third of the population of Austria is primarily engaged in running. However, thosewho participate in competitive physical games that are played for enjoyment rather than forprofit frequently have excessive repetition issues.[5]The most frequent lateral side of the knee running injury is iliotibial band syndrome (ITBS). It isa non-traumatic intrinsic factor brought on by constant flexion and extension of the knee, whichirritates the surrounding tissues.[6]In their study, Orchard et al. identified a "impingement zone"that occurs at, or just below, 30 degrees of knee flexion during foot striking during the initial stages of running. [7]The leg decelerates during this impingement phase of the running cycle as aresult of eccentric contractions of the gluteus maximus and tensor fascia late muscles, whichgenerates strain in the iliotibial band.8 Every organ, blood artery, bone, nerve fiber, and musclein the upper leg are held in place by the iliotibial band, a stretch of connective tissue that extendsfrom the hip to the tibial.[9] Typically, an extensive medical history and physical examination areused to diagnose ITBS. Iliotibial band syndrome has a variety of causes, although the primaryproblem is often poorly understood.[10] It was discovered in the past that it may be caused byincreased friction between the ITB distally and outside prominences on the distal end of a longbone used to link the muscles and ligaments of the femur.[11] Iliotibial band syndrome isconnected to structural facts such differences in both lower limbs and protruded outerprominences on the distal section of a long bone that are used for muscle and ligamentattachment.[11] Factors that can be changed include less flexible and weak muscles, particularlypelvic muscles that are connected to the iliotibial band. Iliotibial band syndrome is linked to avariety of activities, including riding a bicycle, swimming in deep water, climbing hills, etc.[12]Tenderness and pain often appear on the outside of the thigh, although they can also travel downthe iliotibial band.13 Pelvic pain may also contribute to this. It may be caused by biological andmechanical issues, most commonly those linked to overexertion in training and activities.[14] Itmay also occur during the most difficult exercises. Running barefoot typically causes ROM atlower limb joints to decrease.[15] They take fewer steps, take more steps, and bear weight whileflexing. This can cause issues with body mechanics. The positions of the pectineus, gracilis,adductor longus, adductor brevis, and adductor magnus alter, reducing the strain on the ITB.[16]Iliotibial band syndrome can be diagnosed in a hospital, however more reliable methods ofdiagnosis should be

utilised.[17] On the outside of the upper leg, there is pain. Pain might bemisleading. It frequently happens as a result of moving more quickly up or down the mountain'sdistance.[18] The phase of gait, which starts when the foot initially hits the ground and concludeswhen the same foot, leaves the ground, causes pain and discomfort in people with iliotibial bandsyndrome.[19] Iliotibial band syndrome sufferers who also hike and run have more pain andsuffering. Iliotibial band syndrome is diagnosed using certain diagnostic procedures. ITBS has acomplex etiology that includes both internal and extrinsic causes. According to somepublications, both conservative and surgical treatments are effective for ITBS. In order to furtherevidence-based management, this study intends to carefully evaluate the ITBS to acquire insightinto the causes, diagnoses, and treatments of ITBS in runners.

II. METHODOLOGY:

A cross-sectional research involving athletes is conducted. The study last for four months. An evaluation of 421 athletes using a simple random selection approach is conducted. Data isgathered from the Lahore and Gujranwala sports boards. In this study, male long jumpers,basketball players, freshmen athletes, athletes aged 15 to 40, and items with either a prior orcurrent diagnosis of ITBE are included. Children, female athletes, and athletes with cardiac conditions are not included in the study. Nobble test is used in this study.Athletes are subjected to nobble tests, after which data is gathered. In the clinical evaluation ofthe runner with suspected ITBS, the Noble compression test is the only diagnostic procedureemployed. The Noble compression test is carried out, in brief, by exerting manual pressure onthe patient's lateral knee, 1-2 cm proximal to the lateral femoral condyle, as the knee is passivelyextended through a range of motion from 60° to full extension. A positive Noble compressiontest is one in which the knee reproduces lateral knee discomfort at a knee flexion angle of around30 degrees.

III. RESULTS

A cross-sectional study with athletes is carried out. The four-month trial was completed. Using a straightforward random selection method, 421 athletes are evaluated. The Lahore andGujranwala sports bodies provide the information. Male long jumpers, basketball players,athletes in their first season, athletes between the ages of 15 and 40, and things with either a pastor current diagnosis of ITBE are all included in this study. The research excludes athletes withheart problems, children, and female athletes. This research makes use of the nobble test. Nobbletests are performed on athletes, and the results are recorded. The Noble compression test is theonly diagnostic method used in the clinical assessment of the runner with suspected ITBS. Inorder to perform the Noble compression test, the patient's lateral knee is manually compressed 1-2 cm proximal to the lateral femoral condyle while the knee is passively extended through arange of motion from 60° to full extension. When the knee reproduces lateral knee soreness at aknee flexion angle of around 30 degrees, the Noble compression test is considered positive.

Age of Patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-20	111	26.4	26.4	26.4
	21-30	218	51.8	51.8	78.1
	31-40	92	21.9	21.9	100.0
	Total	421	100.0	100.0	

The patient's age is shown in **table 1**. According to this table, a total of **421** patients are included in the study, of whom **111** patients **(**or **26.4%)** are in the **15-20** age group, **218** patients **(**or **51.8%)** are in the **21–30** age group, and **92** patients **(**or **21.9%)** are in the 31–40 age group.

Table 2

Body Mass Index

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-22	123	29.2	29.2	29.2
	23-25	191	45.4	45.4	74.6
	26-30	101	24.0	24.0	98.6
	31-35	6	1.4	1.4	100.0
	Total	421	100.0	100.0	

The body mass index of the chosen population is shown in **table 2**. This table shows that the **BMI** of **123** patients ranged from **20** to **22** with a percentage of **29.2%** and that of 191 patients ranged from **23** to **25** with a percentage of **45.4%**. **101** patients had **BMIs** between **26** and **30** with a percentage of **24.0%,** while **6** patients had **BMIs** between **31** and **35** with a percentage of **1.4%.**

Table 3

Athletes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elite	82	19.5	19.5	19.5
	Sub-Elite	250	59.4	59.4	78.9
	Amature	89	21.1	21.1	100.0
	Total	421	100.0	100.0	

The many categories of athletes are described in **table 3**. This table shows that **89** patients fall into the Amature category with a percentage of **21.1%**, while **82** patients fall into the Elite category with a percentage of **19.5**, and a total of **250** participants fall into the Sub-Elite category with a percentage of **59.4%**.

Table 4

Dominated Leg

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Right	189	44.9	44.9	44.9
	Left	189	44.9	44.9	89.8
	Both	43	10.2	10.2	100.0
	Total	421	100.0	100.0	

The results of the injury on the dominant limb are shown in **table 4**. This table indicates that **43** patients had both legs affected with a percentage of **10.2%**. There were **189** patients whose right leg

was affected with a percentage of **44.9%** and **189** patients whose left leg was affected with a percentage of **44.9%**.

Table 5

When did you start playing Games?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6 Month	59	14.0	14.0	14.0
	1-Year	232	55.1	55.1	69.1
	More then 1 year	130	30.9	30.9	100.0
	Total	421	100.0	100.0	

The start time of the game is shown in **Table 5** for the athletes. This table shows that around **59** patients began playing games within the past six months **(14.0%), 232** patients began playing within a year **(55.1%),** and **130** patients began playing for longer than a year **(30.9%)**.

Table 6

Number of injuries in Last 6 Months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	157	37.3	37.3	37.3
	1-2	215	51.1	51.1	88.4
	>2	49	11.6	11.6	100.0
	Total	421	100.0	100.0	

Table 6 details the number of injuries during the last six months. This table shows that **157** patients have no injuries at all with a frequency of **37.3%**, **215** patients have one to two injuries over the last six months with a percentage of **51.1%**, and **49** patients have more than two injuries within the past six months with a frequency of **11.6**.

Table 7

Injury Located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Knee	112	26.6	26.6	26.6
	Upper Leg	124	29.5	29.5	56.1
	Hip	12	2.9	2.9	58.9
	Back	92	21.9	21.9	80.8
	None	81	19.2	19.2	100.0
	Total	421	100.0	100.0	

The location of the injury on the body is shown in **table 7**. In this table, **112** patients with a frequency of 26.6% have knee injuries, **124** patients with a frequency of **29.5%** have upper leg injuries, and **12** patients with a frequency of **2.9%** have hip injuries. Out of a total of **421** patients, about **92** patients **(21.9%)** experienced back injuries and **81** patients **(19.2%)** were completely unharmed.

Table 8

Do you warm up?

		Frequency	Percent	Valid Percent
Valid	Always	110	26.1	26.1
	Ocassionaly	246	58.4	58.4
	Never	65	15.4	15.4
	Total	421	100.0	100.0

Table 8 shows the percentage of athletes that warm up before exercise. This table shows that out of a total of **421** patients, **110** patients start their activity with a warm-up (a percentage of **26.1%**), **246** patients occasionally warm up before training (a percentage of **58.4%**), and **65** patients never warm up before exercise (a percentage of **15.4%**).

Table 9

Type of Games?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Indoor	96	22.8	22.8	22.8
	Outdoor	325	77.2	77.2	100.0
	Total	421	100.0	100.0	

The types of games that patients play are listed in **Table 9**. From a total of **421** patients, this table shows that **96** patients play indoor activities with a frequency of **22.8%** and **325** patients play outdoor games with a frequency of **77.2%.**

Table 10

Ober's Test

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Positive	341	81.0	81.0	81.0
Negative	80	19.0	19.0	100.0
Total	421	100.0	100.0	

The frequency of the Ober's test in the chosen population is displayed in **Table 10**. This table shows that out of a total of **421** patients, **341** patients had positive ober's test results with an **81.0%** frequency and **80** patients had negative ober's test results with a **19.0%** frequency.

IV. DISCUSSION

There is just a little body of evidence to support a particular method for the etiology, diagnosis,and treatment of ITBS, according to the results of this rigorous, quality-controlled, systematicanalysis. In order to find other therapy modalities that could be pertinent, we also consideredobservational studies.20 The majority of patients were able to run despite their pain, althoughthey often ran less miles, fewer hills, and slower than they originally wanted. Only 8 peoplecould not run at all while they were experiencing symptoms. Like with other concussions, thereare undoubtedly a lot of subclinical cases where people change their own running regimenswithout consulting a doctor, and the symptoms resolve on their own. The majority of individualshad altered their running routine significantly before having difficulties.21 The most frequentmodification was an increase in mileage; other factors included a switch to hilly terrain and anincrease in speed or interval training. A few runners did mention switching from soft surfaces toconcrete roads before their problems started. Our latest observations show that switching toshoes with a so-called varus wedge increases the risk of iliotibial band syndrome in runners withnormal-appearing feet.22 Even while a runner with pronated feet may benefit greatly from theseshoes, the increased lateral leg stress might cause the symptoms to develop. Condition orproblem band stretching, local heating and/or cold treatments, anti-inflammatory drugs, localpain killers, were among the nonsurgical options. No single course of therapy seemed to besuperior toward the alternatives, and not every runner found them to be acceptable.23 Treatmentmodifications were made in accordance with the patient's preferences and tolerance. Topicalvasodilatory medications were advised by Orava (1978), but none were applied to our runners.To summarise, it is challenging to get clear conclusions regarding the treatment of ITBS inrunners due to the research' poor methodological quality. Future research should include issueswith hiding treatment allocation, population characterization, possible selection bias, andconfounding variable descriptions. It is unclear from investigations of the aerodynamics (kineticsand kinematics) of runners with and without ITBS whether the ITBS developed even beforechange in dynamics or if the ITBS was a result of the biomechanics difference. For theevidence-based treatment of this ailment and for research, more study of the particulartherapeutic value of conservative treatments for athletes with ITBS is crucial. The arthroscopicmethod would seem especially suited since it enables the examination and therapy of any intra-articular disease, and surgical procedures seem to be beneficial in treating these conditions.24 Itwould be intriguing to contrast these therapies in a future RCT with additional participants.Based on the scant data found in this study, ITBS should be treated with exercise to develop thehip muscles, advice on gait and running technique, shoe selection, and appropriate runningsurfaces. Future research should concentrate on the validity of this instrument and if it can beutilised to identification schemes of ITBS in order to improve the condition's efficacy of therapy.

V. CONCLUSION

Research on the treatments of ITBS in runners has poor methodological quality, and the findingsare often contradictory. To avoid selection bias and maximise the generalizability of findings,study designs should be modified. Iliotibial ligament syndrome tends to have a fair long-termoutlook, while some runners have repeated problems if they suddenly increase their mileage.Surgery was not used for this syndrome, however it could be for uncommon refractory situationswhen the athlete does not want to switch sports. The creation of a screening protocol for runnerswith ITBS might benefit from understanding the patho-physiology of the condition.

CONFLICT OF INTEREST:

There was no conflict of interest**.**

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REFERENCES

[1] .1. Flato R, Passanante GJ, Skalski MR, Patel DB, White EA, Matcuk GR. The iliotibial tract: imaging, anatomy, injuries, and other pathology. Skeletal radiology.2017;46(5):605-22.

[2] 2. Patel DR, Yamasaki A, Brown K. Epidemiology of sports-related musculoskeletal injuries in young athletes in United States. Translational pediatrics. 2017;6(3):160.

[3] 3. Hall R, Foss KB, Hewett TE, Myer GD. Sport specialization's association with an increased risk of developing anterior knee pain in adolescent female athletes. Journal of sport rehabilitation. 2015;24(1):31-5.

[4] 4. Altman AR, Davis IS. Prospective comparison of running injuries between shod and barefoot runners. British journal of sports medicine. 2016;50(8):476-80.

[5] 5. Barton CJ, Bonanno D, Carr J, Neal B, Malliaras P, Franklyn-Miller A, et al. Running retraining to treat lower limb injuries: a mixed-methods study of current evidence synthesised with expert opinion. British journal of sports medicine. 2016;50(9):513-26.

[6] 6. Petek BJ, Moulson N, Baggish AL, Kliethermes SA, Patel MR, Churchill TW, et al. Prevalence and clinical implications of persistent or exertional cardiopulmonary symptoms following SARS-CoV-2 infection in 3597 collegiate athletes: a study from the outcomes Registry for cardiac conditions in athletes (ORCCA). British journal of sports medicine. 2022;56(16):913-8.

[7] 7. Maron BJ, Haas TS, Ahluwalia A, Murphy CJ, Garberich RF. Demographics and epidemiology of sudden deaths in young competitive athletes: from the United States National Registry. The American journal of medicine. 2016;129(11):1170-7.

[8] 8. Injury IOC, Group IEC, Bahr R, Clarsen B, Derman W, Dvorak J, et al. International Olympic Committee consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sports 2020 (including the STROBE extension for sports injury and illness surveillance (STROBE-SIIS)). Orthopaedic journal of sports medicine. 2020;8(2):2325967120902908.

[9] 9. Gouttebarge V, Castaldelli-Maia JM, Gorczynski P, Hainline B, Hitchcock ME, Kerkhoffs GM, et al. Occurrence of mental health symptoms and disorders in current andformer elite athletes: a systematic review and meta-analysis. British journal of sportsmedicine. 2019;53(11):700-6.

[10] 10. Keogh JW, Winwood PW. The epidemiology of injuries across the weight-training sports. Sports medicine. 2017;47(3):479-501.

[11] 11. Mascarenhas VV, Rego P, Dantas P, Morais F, McWilliams J, Collado D, et al. Imaging prevalence of femoroacetabular impingement in symptomatic patients, athletes, andasymptomatic individuals: a systematic review. European journal of radiology.2016;85(1):73-95.

[12] 12. Weber U, Jurik AG, Zejden A, Larsen E, Jørgensen SH, Rufibach K, et al. Frequency and anatomic distribution of magnetic resonance imaging features in the sacroiliac joints ofyoung athletes: Exploring "background noise" toward a data-driven definition ofsacroiliitis in early spondyloarthritis. Arthritis & Rheumatology. 2018;70(5):736-45.

[13] 13. Cassel M, Baur H, Hirschmüller A, Carlsohn A, Fröhlich K, Mayer F. Prevalence of A chilles and patellar tendinopathy and their association to intratendinous changes inadolescent athletes. Scandinavian journal of medicine & science in sports.2015;25(3):e310-e8.

[14] 14. Harmon KG, Asif IM, Maleszewski JJ, Owens DS, Prutkin JM, Salerno JC, et al. Incidence, etiology, and comparative frequency of sudden cardiac death in NCAAathletes: a decade in review. Circulation. 2015;132(1):10.

[15] 15. Gouttebarge V, Jonkers R, Moen M, Verhagen E, Wylleman P, Kerkhoffs G. The prevalence and risk indicators of symptoms of common mental disorders among currentand former Dutch elite athletes. Journal of sports sciences. 2017;35(21):2148-56.

[16] 16. Russek LN, Errico DM. Prevalence, injury rate and, symptom frequency in generalized joint laxity and joint hypermobility syndrome in a "healthy" college population. Clinicalrheumatology. 2016;35(4):1029-39.

[17] 17. Aasa U, Svartholm I, Andersson F, Berglund L. Injuries among weightlifters andpowerlifters: a systematic review. British journal of sports medicine. 2017;51(4):211-9.

[18] 18. Sperstad JB, Tennfjord MK, Hilde G, Ellström-Engh M, Bø K. Diastasis recti abdominis during pregnancy and 12 months after childbirth: prevalence, risk factors and report oflumbopelvic pain. British journal of sports medicine. 2016;50(17):1092-6.

[19] 19. Albers IS, Zwerver J, Diercks RL, Dekker JH, den Akker-Scheek V. Incidence and prevalence of lower extremity tendinopathy in a Dutch general practice population: across sectional study. BMC musculoskeletal disorders. 2016;17(1):1-6.

[20] 20. Smith PJ, Gerrie BJ, Varner KE, McCulloch PC, Lintner DM, Harris JD. Incidence and prevalence of musculoskeletal injury in ballet: a systematic review. Orthopaedic journalof sports medicine. 2015;3(7):2325967115592621.

[21] 21. Marshall SW, Guskiewicz KM, Shankar V, McCrea M, Cantu RC. Epidemiology of sports-related concussion in seven US high school and collegiate sports. Injuryepidemiology. 2015;2(1):1-10.

[22] 22. Zhang AL, Sing DC, Rugg CM, Feeley BT, Senter C. The rise of concussions in the adolescent population. Orthopaedic journal of sports medicine.2016;4(8):2325967116662458.

[23] 23. Gardner RC, Yaffe K. Epidemiology of mild traumatic brain injury and neurodegenerative disease. Molecular and Cellular Neuroscience. 2015;66:75-80.

[24] 24. Manley G, Gardner AJ, Schneider KJ, Guskiewicz KM, Bailes J, Cantu RC, et al. A systematic review of potential long-term effects of sport-related concussion.

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