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Prevalence Of Hamstring Tightness And Associated Risk Factor Among Non-Professional Football Players

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ABSTRACT

Background: Hamstring tightness is a common issue among football players, particularly nonprofessionals, due to inadequate training, poor flexibility, and muscle imbalances. Tight hamstrings can lead to a higher risk of injuries, affecting performance and long-term musculoskeletal health. Identifying the prevalence of hamstring tightness and its associated risk factors can help implement targeted prevention strategies[1].

Aim: To determine the prevalence of hamstring tightness and its risk factors among non-professional football players.

Method: This cross-sectional observational study included 50 non-professional football players aged 18-25. Participants were assessed using the Straight Leg Raise (SLR) test and the Lower Extremity Functional Scale (LEFS). Risk factors such as inadequate warm-up, training load, and muscle strength imbalances were evaluated using the Oslo Sports Trauma Research Centre Questionnaire on Health Problems.

Results: Analysis of 50 participants revealed an average SLR test score of 48.3° ± 11.4° for the right leg and 48.76° ± 10.43° for the left leg, indicating a significant prevalence of hamstring tightness. The mean LEFS score was 49.47 ± 10.83, showing functional limitations among players. Factors such as inadequate warm-up, insufficient strength training, and fatigue were significantly associated with hamstring tightness. The correlation between the lower extremity functional scale and risk factor analysis is Significant.

Conclusion: The study highlights a high prevalence of hamstring tightness and associated risk factors among non-professional football players. Preventive measures, including structured warm-up routines, strength training, and flexibility exercises, are essential to reduce hamstring tightness and prevent injuries[5].

Keywords: *Hamstring tightness, risk factors, non-professional football players, SLR test, LEFS, Oslo Sports Trauma Research Centre Questionnaire.*

1. INTRODUCTION

Hamstring tightness is a prevalent musculoskeletal condition among football players, affecting performance and increasing injury risk[6]. Non-professional football players, who often lack access to structured training programs, may be more vulnerable due to insufficient warm-up, poor flexibility, and inadequate muscle conditioning[7]. Previous studies have highlighted that reduced hamstring flexibility is linked to higher incidences of hamstring strains and lower limb dysfunction[8].

Football involves high-intensity sprints, sudden accelerations, and decelerations, all of which place significant stress on the hamstring muscles[9]. Without proper conditioning, players experience decreased range of motion (ROM) and increased muscular stiffness, which can predispose them to injury[10]. Identifying the prevalence of hamstring tightness and its contributing factors can help in designing targeted interventions for injury prevention[11].This study aims to evaluate the prevalence of hamstring tightness among non-professional football players and explore associated risk factors. By understanding these factors, coaches and players can implement effective training modifications to enhance performance and reduce injury risks[12].

Football players' hamstring tightness is caused by a number of risk factors. Hamstring stiffness is frequently linked to poor biomechanics, muscular exhaustion, inadequate flexibility training, and inadequate warm-up. Muscle stiffness can also be influenced by outside variables like training volume, playing surface, and prior injuries[13]. The problem may be made worse by non-professional athletes' poor training methods and short rest times. The development of focused therapies to lower the risk of hamstring injuries and enhance general performance can be aided by the identification of these risk variables.

Football players at all levels, from elite professionals to amateur and recreational sports, are susceptible to hamstring strains, which are among the most prevalent musculoskeletal ailments in the sport. These injuries lower player performance and raise the chance of recurrence since they frequently cause players to miss a large amount of time from practice and competition. Although hamstring injuries in professional football have been the subject of much research, less is known about their occurrence and risk factors in non-professional players[14]. Amateur, semi-professional, and recreational football players are examples of non-professional athletes who frequently participate in the sport with differing levels of physical fitness, training rigor, and injury avoidance techniques.

2. METHODOLOGY

The present study adopted a cross-sectional observational design to assess hamstring flexibility, functional limitations, and injury risk factors among non-professional football players. A total of 50 male participants aged 18–25 years, actively engaged in football training for at least one year, were recruited based on specific inclusion and exclusion criteria. Individuals with a history of lower limb fractures, ligament injuries, recent surgeries, or neurological conditions were excluded. Assessment instruments were the Straight Leg Raise (SLR) Test, a measure of hamstring flexibility through an assessment of limited hip flexion below 70° with posterior thigh rigidity. Function limiting hamstring tightness was measured with the Lower Extremity Functional Scale (LEFS). Finally, the Oslo Sports Trauma Research Centre Questionnaire was also used to examine warm-up regimen, training volume, levels of fatigue, and history of injury. The purpose of this research was to gain understanding of the hamstring flexibility, functional performance, and susceptibility to injury in non-professional footballers.

Procedure: Lower extremity functional scale: Extreme Difficulty or Unable to Perform Activity, quite a Bit of Difficulty, Moderate Difficulty, A Little Bit of Difficulty, No Difficulty. The patient's score is tallied at the bottom of the page. The maximum possible score is 80 points, indicating very high function. The minimum possible score is 0 points, indicating very low function. Straight leg raise test: Have your patient lie down on the bed in a supine position (lying face up), without a pillow supporting their neck. Make sure that their legs are straightened and their feet are pointing upward. Position yourself on the side of the patient. Start on the unaffected leg's side. Use one of your hands to grasp the patient's ankle, place your other hand on the knee to provide support. Slowly lift the leg upward while using your distal hand on the patient's heel and your proximal hand on the patient's anterior thigh to keep the knee extended. While you are doing this. Observe the patient's face to check for signs of discomfort. Passively raise the leg until end range. If possible, measure the angle with a goniometer. Do the same test on the affected leg. Passively raise until pain or symptoms are replicated, or until the patient experiences tightness on the posterior thigh. Take note of the ROM and area of pain. A positive test occurs when the patient experiences pain or symptoms below the knee during hip flexion between 30-70 degrees. Pain occurring beyond 70 degrees may suggest other issues, such as hip joint pathologies, sacroiliac joint dysfunction, or tightness in the hamstrings, gluteus maximus, or hip capsule. Negative: A negative test is observed when the patient reports no pain or symptoms throughout the test, even as the leg is raised through the full range of motion**. Oslo Sports Trauma Research Centre (OSTRC) Questionnaire** is a proven questionnaire applied in measuring risk factors for injury, training load, levels of fatigue, and prior history of injury among sports participants. The method of giving the questionnaire to amateur footballers.

Data Collection and Analysis: Participants underwent a physical assessment for SLR and LEFS scores. Questionnaire responses were analysed. Descriptive statistics (mean ± SD) were used to summarize findings. Pearson correlation tests were applied to assess associations between hamstring tightness and risk factor.

3. STATISTICAL ANALYSIS AND RESULTS

TABLE 1: AGE DISTRIBUTION

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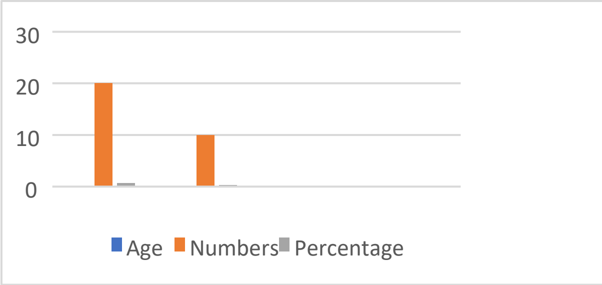


Age	Numbers	Percentage
18-21	20	66.66%
22-25	10	33.33%

Table 1 shows that the percentage of age distribution and Graphical Representation of Age Distribution.

TABLE 2: LOWER EXTREMITY FUNCTIONAL SCALE

LEFS	NUMBERS	PRECENTAGE
Mild (≥ 60)	8	26.6%
Moderate (45 – 59)	10	33.4%
Severe (≤ 44)	12	40%

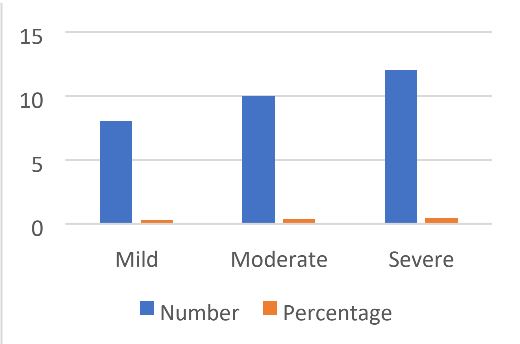


Table 2 shows that the percentage of LEFS and Graphical Representation of Age Distribution.

TABLE 3: STRAIGHT LEG RAISE TEST (RIGHT & LEFT)

N	SIDE	MEAN	S. D
30	RIGHT	48.3	11.405
30	LEFT	48.76	10.43

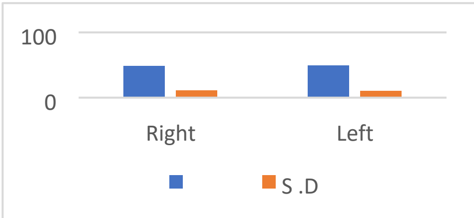


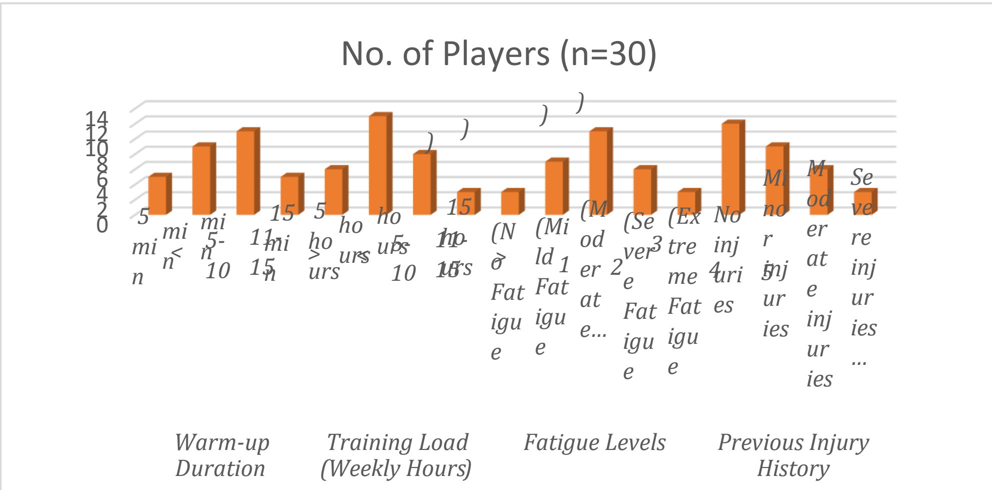
Table 3 shows that the mean and SD of SLR and Graphical Representation of SLR

TABLE 4: RISK FACTOR ANALYSIS:

Risk Factor	Category	No. of Players (n=30)
Warm-up Duration	< 5 min	5
	5-10 min	9
	11-15 min	11
	> 15 min	5
Training Load (Weekly Hours)	< 5 hours	6
	5-10 hours	13
	11-15 hours	8
	> 15 hours	3
Fatigue Levels	1 (No Fatigue)	3
	2 (Mild Fatigue)	7
	3 (Moderate Fatigue)	11
	4 (Severe Fatigue)	6
	5 (Extreme Fatigue)	3
Previous Injury History	No injuries	12
	Minor injuries (<1 week missed)	9
	Moderate injuries (1-4 weeks)	6
	Severe injuries (>4 weeks)	3

Table 4 shows that the risk factor analysis

GRAPH: 4



Graphical representations of risk factor analysis

TABLE 5: Correlation between LEFS and Fatigue:

Correlations			
		LEFS	fatigue
LEFS	Pearson Correlation	1	.940
	Sig. (1-tailed)		.000
	N	30	30
fatigue	Pearson Correlation	.940	1
	Sig. (1-tailed)	.000	
	N	30	30
Correlation is significant at the 0.05 level (1tailed).			

Table 5 shows that the correlation between LEFS and Fatigue and it's significant value is 0.05

TABLE 6: Correlation between LEFS and Training load:

Correlations			
		LEFS	training load
LEFS	Pearson Correlation	1	.913
	Sig. (1-tailed)		.000
	N	30	30
training load	Pearson Correlation	.913	1
	Sig. (1-tailed)	.000	
	N	30	30
Correlation is significant at the 0.01 level (1-tailed).			

Table 6 shows that the correlation between LEFS and training load and its significant value is 0.01

TABLE 7: Correlation between LEFS and Warm up duration:

Correlations			
		LEFS	Warm up duration
LEFS	Pearson Correlation	1	.930

	Sig. (1-tailed)		.000
	N	30	30
Warm up duration	Pearson Correlation	.930	1
	Sig. (1-tailed)	.000	
	N	30	30
Correlation is significant at the 0.05 level (1-tailed).			

Table 7 shows that the correlation between LEFS and warm up duration and its significant value is 0.05

TABLE 8: Correlation between LEFS and Previous Injury:

Correlations			
		LEFS	previous injury
LEFS	Pearson Correlation	1	.368
	Sig. (1-tailed)		.023
	N	30	30
previous injury	Pearson Correlation	.368	1
	Sig. (1-tailed)	.023	
	N	30	30
Correlation is significant at the 0.05 level (1-tailed).			

Table 8 shows that the correlation between LEFS and previous injury and it's significant value is 0.05

4. DISCUSSION

According to the statistical analysis of the collected data, hamstring injuries are significantly more common in non-professional football players. According to the results of the Straight Leg Raise and Lower Extremity Functional Scale tests, all 30 participants, aged 18 to 25, had some degree of risk for hamstring injuries. The results show that recreational football players frequently sustain hamstring injuries, which result in decreased hamstring flexibility and mild impairments in lower limb function. 21-year-olds were the age group most impacted, which is consistent with other research that suggests

younger athletes are more likely to suffer from hamstring strains as a result of increasing physical activity and abuse of their muscles.

Functional Limitations: According to the LEFS scores, the majority of players had moderate impairments, which would have affected their capacity to engage in football-related activities like kicking and sprinting. In order to improve recovery, this emphasizes the necessity of focused rehabilitation programs that emphasize strength and flexibility[1]. This implies that non-professional athletes are particularly vulnerable to hamstring strains, which may be brought on by things like poor warm-up regimens, inappropriate training methods, or a lack of expert advice on injury prevention measures. Age and Experience's Effects According to the study, the risk of hamstring injuries is influenced by age. Younger athletes (18–25 years old) are frequently in their best physical shape, but they may also be more likely to overexert themselves without getting enough rest. Furthermore, nonprofessional athletes frequently have differing degrees of expertise, which may result in irregular training schedules and heightened vulnerability to injuries[2,3]. Possible Reasons for the High Prevalence Absence of Structured Training: Non-professional athletes might not adhere to organized strength and conditioning regimens like professional athletes do, which leaves their muscles more susceptible to strain. Insufficient Warm-Ups and Cool-Downs: Ignoring crucial pre- and post-exercise routines may increase the risk of injury and muscle soreness. Equipment and Playing Surfaces: Nonprofessional athletes may utilize subpar footwear or exercise on less-than-ideal surfaces, which puts more strain on the hamstrings[5]. Fatigue and Overuse: Players are more likely to sustain injuries if they don't get enough rest and recuperation. The findings of the study highlight the necessity of injury prevention plans specifically designed for football players who are not professionals. The frequency of hamstring injuries may be decreased by putting in place organized warm-up and stretching regimens, emphasizing eccentric hamstring strengthening exercises, and teaching athletes injury avoidance strategies[12]. Furthermore, raising awareness of appropriate recuperation and rehabilitation techniques is essential to reducing the risk of injuries. In this study non-professional football players have a high prevalence of hamstring injury. The risk factor analysis of the 30 participants gives important information regarding warm-up time, training load, fatigue, and history of previous injury, which can lead to injury risk and performance in recreational football players. Warm-up DurationThe spread of warm-up time shows most players (11 of 30) did warm-ups that lasted from 11-15 minutes, which is ideal for prevention of injury and improvement in performance. Although, remarkably, 5 players took fewer than 5 minutes to warm up, which can be assumed to heighten their chances of muscle strain and other injuries[13]. Possible injury reduction can be achieved by advising players to carry out warmer routine warm-ups. Training Load (Weekly Hours)-The data suggest that most players trained between 5-10 hours per week (13 out of 30), which is a moderate workload. However, 6 players trained for less than 5 hours per week, while 3 players exceeded 15 hours. Both extremes could be associated with increased injury risks—low training load may result in inadequate conditioning, whereas excessive training may contribute to overuse injuries. A balanced training regimen is essential for optimizing performance and minimizing injury risk. Fatigue Levels-Fatigue plays a significant role in preventing injury. The most common level (11 players) of fatigue was moderate, followed by 7 with mild, and 6 with severe. 3 players had extreme fatigue. Sustained high levels of fatigue have the potential to enhance susceptibility to injury and negatively affect performance. Proper recovery techniques, such as rest, hydration, and nutrition, are necessary to ensure player health. Previous Injury History-The injury history information indicate that 12 players had no history of prior injury, while 18 players had a history of injury. Out of the 18, 9 had mild injuries, 6 had moderate injuries, and 3 had severe injuries requiring over four weeks of convalescence. This indicates the existence of past injuries, suggesting that there might be a demand for specific injury prevention programs in terms of strength conditioning, flexibility, and rehabilitation exercises.

5. CONCLUSION

The research points to the fact that the prevalence of hamstring injury is high in non-professional football players, particularly at the age of 21 years. Most of the players had major functional impairments on the Lower Extremity Functional Scale (LEFS) but still played at an acceptable rate. Straight Leg Raise (SLR) test indicated comparable flexibility limitations on both limbs, with the majority of participants having a range of motion between 65° and 67°. These results highlight the importance of organized warm-ups, equilibrated training loads, and fatigue management. Targeted rehabilitation, such as core stability training and Nordic hamstring exercises, can minimize injury risk and enhance recovery.

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