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Orignal Article

Prevalence of Hamstring Injury Among University Athletes

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ABSTRACT

Hamstring injury is said to be the most common non-contacting injury in many professions and sports like dancing, hockey, running, martial arts and the kicking sports like rugby, soccer and football. **Objective;** To determine the prevalence of hamstring injury among university athletes. **Methods;** This study was conducted by Quantitative Research Method and an online survey method was used and were created to collect the data. **Results;** A total of 189 participants was considered in the study. Hamstring injuries are most prevalent among male participants 126 (68.4%) most reporting severe pains to compare to the female with 63 (31.6%). **Conclusion;** The difference was statistically different with a p-value of 0.014, different age groups are also associated with their response to hamstring injuries with a p-value of 0.034 and types of games, activities also play a role in detecting their hamstring injuries among athletes with a p-value of 0.046.

INTRODUCTION

Hamstring injuries are normal in athletes. Hamstring injuries usually happen due to the positioning stage, late swinging and these injuries also happen because of the absence of power imbalances, deficient warm-ups, poor posture of lumber, lack of flexible muscles and lower back injury[1]. A Hamstring injury is a very disappointed and frustrating process because the healing process takes a little period and the pace of re-injury is high. This injury is normal in those players who are associated with jumping, high-speed running and sprinting activities and stretching to extreme joint positions[2]. This type of injury is usually repetitive and it leads to costs inaccessibility for competition, unavailable for treatment, missed time of training. Many athletes' face this hamstring injury during their careers[3-5]. The acute hamstring strains are muscle strain/injury which consists of the three separate hip muscles that are located on the back of the thigh, semimembranosus and the semitendinosus, in the center we have is called biceps femoris. All the three muscles start at the back of the hip and enter the back of the knee. The primary purpose of the hamstring is to flex the knee joint and on the other side, to expand the hip joint[6].with proper medical healthcare, an athlete who has suffered from the first-degree muscle dystrophy require as long as three weeks or less to get back to the activity, while grade two or grade three tears can require more than three weeks and can last for months[7].Hamstring injury can be prevented, but it can only be prevented when we understand and identify the factors heading to the injury [8].For a professional athlete, muscle injury causes the player to be absent for a longer period of time than expected from the tournament and therefore have score rate is also very high[9].In proficient competitors, in all the injuries of Australian rules footballers is about 15% of acute hamstring strains5 and the British soccer of all the injuries is 12% 26. In the American National Football League (NFL) from 1998

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to 2007, there were 2.2 muscle injuries per 1,000 players placed on the training and instructional camp, second just to knees hyper-extends[10].Previous literature analyzed that the degree of injury is related to significant clinical highlights like a season of recuperation and the threat of re-injury[11]. used quantitative method and from a sample of male athletes, the LHBF was the most generally influenced muscle by intense injury, with the proximal intersection and proximal areas being generally common. The proximal intersection area was connected with a more prominent degree of oedema in the LHBF and ST muscles, with proximal areas, generally speaking, in the LHBF having huge bigger oedema contrasted with distal areas by and large. The study analyzed that logical distinguishing proof of hazard factors identified with hamstring injury addresses one pillar for creating fitting preventive measures. The study results in a conclusion that in this imminent examination permit us to infer that isokinetic mediation, as a preseason screening device in proficient players, leads to the early recognition of solidarity irregular characteristics[12].This study focused on the rehabilitation of hamstring injuries and came to the conclusion that a rehabilitation protocol comprising of essentially extending the sorts of activities is more gripping than a traditional convention in elevating get back to first-class athletes after an intense hamstring injury. On this assumption, it is advised that hamstring injury rehabilitation protocols have to be specially founded on the strength and adaptability practices that basically involve practices with high loads at long muscle–ligament lengths [13].This study addressed Australian athletes to study the risk factors of hamstring injuries. The study conducted various expected causal relations between risk factors and hamstring injury. Species, age and quadriceps adaptability were the lone two huge self-governing indicators of time to hamstring injury [14].The focus of this study is old athletes of Australia in order to measure how this injury can effect on the basis of age. This study concludes that old athletes, without a background marked by a hamstring injury in the past year, are at essentially raised danger of hamstring injury. This gathering of competitors was discovered to be altogether unique to the gathering at most reduced danger matured 20 years or less concerning body weight, BMI, lower leg dorsiflexion scope of development, hip flexor adaptability and dynamic hip inside pivot scope of development[15].A study focused on the group of players by dividing it into two categories that are the experimental group and the control group[16].And after analyzing the experiences of the players and after conducting the results, the study came to a conclusion that the experimental groups have less injury than the control group. Further, the same research was studied by keeping in mind the Rugby game[17]and the dancers[18], this study also focused on two groups, and the result was the same, the experimental group experienced few injuries as compared to the control group. This study focused on the reasons behind the results of the upper literature that the experimental groups faceless injury than the control group. The study analyzed and came to the conclusion that the experimental groups take part in different programs which includes relaxation, visualization, emotional relief and cognitive restructuring [19].A study focused on the European athletes estimating that how many injuries each players faces approximately. The study focused on the European athletes that almost eight million players face medical injuries in a year. The further research came to the conclusion that each player faces two injuries in a season [20].In his study, came to the conclusion that a player should be aware of the actions that are important to prevent the injury. Hamstring injury is proven to be the most stressful injury for the players who have invested their lives in the sports because if the injury is severe it could heavily affect the career of the players[21].The research study focused on the psychological level and factors that could affect the injuries that occurred during the game, the study analyzed that the players who are feeling stressed or in depression are at high risk of facing injuries. The model associated with this research study is the Stress, injury model 1998. This also focused that the stress and the negativity in life raise the chances of injuries [22].The major focus of this study is female athletes. The main objective of the study is to analyze the psychological factors for injuries of female athletes. The research concluded that the stress of lives is more effective in female athletes and the coach of the players must know about it. Coaches should motivate the players so they can feel relaxed and concerned about the game [23].The research study focused on the Nordic hamstring exercise in injury prevention programmers halves the rate of hamstring injuries. The study concluded that the NHE reduce hamstring injuries by up to 51%. In short, the NHE minus half of the rates of hamstring injuries. The study focused on 8459 players across multiple sports in different athletes[24].The research study focused on the students and the main objective of the study is to study the cause of the tightness of hamstring faced by the players and came to the conclusion that sitting for a long time can cause hamstring tightness. Almost 82% of students face tightness because of extensive sitting [25].The research suggests Grade one and grade two are treated with rest, ice packs, compression, elevation, non-steroidal anti-inflammatory drugs, relative mobilization, analgesics as required and needed. The first three to five days of treatment are aimed at controlling oedema, pain and

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haemorrhage. The progressive ambulance is started when growing and delicacy start to die down, helped with crutches until a free-walking is conceivable. Gentle painless stretching should be started. Stretching increases as long as it is pain-free (starts with isometric exercise, then progresses to isokinetic). The courage to walking, running and jogging increases with endurance. Return to the competition after full recovery from injury is allowed [26-30].Lack of warm-up and proper guidelines in sporting activities before and after the onset of hamstring injuries is investigated. The aim of this study is to assess the prevalence of Hamstring injuries among University athletes.

METHODS

This study was conducted by Quantitative Research Method, the data was collected from University of Lahore athletes mainly, followed by three other universities in Lahore Pakistan. In this study the online survey method was used and questionnaires were created to collect the data. Sample size consist of 189 participants, athletes of different departments of universities(University of Lahore, University of Central Punjab, Superior University and COMSAT University).Data was analyzed in statistical package for social sciences (SPSS) Version 24. Continues variable were analyzed as mean ± standard deviation. Descriptive analysis was done to calculate variable such as age and gender, types of games activities were analyzed using frequency tables. Pearson chi-square test was applied evaluate the association between their age group, gender and types of games activities with response of hamstring injury. The statistical level was set at p-value of <0.05

		Mean ±S.D			
A1	**AGE**	27.5±0.34			
		Male (%)	**Female (%)**		
A2	**gender**	126(68.4%)	63(31.6%)		
		A1	**A2**	**A3**	**A4**
A5	**University attended**	80(40.9%)	46(23.7%)	39(21.7%)	24(13.6%)
		B1	**B2**	**B3**	**B4**
A6	**How many times do you play/train a day**	(32.8%)	(36.4%).	(22.2%)	(8.6%)

Table 1: Demographics

*A1 University of Lahore
*A2 University of central Punjab
*A3 Superior University
*A4 Comsat University
** B1 Daily
**B2 Alternate
**B3 Weekly
** B4 Others

In terms of prevalence in table 2, 82(43.4%) with extreme difficulty or unable to perform activity about their perception on hamstring injury and 0[0.0%] find no difficulty in their usual work, housework or school activities. In their usual hobbies, recreational or sporting activities. 85[45.0%] moderate difficulty, 0(0.0%) quite a bit of difficulty. On Performing heavy activities around your home most participant reports extreme difficulty while performing tasks 152(47.3%).

		A	B	C	D	E	TOTAL
B1	Any of your usual work, house work or school activities?	82(43.4)	37(19.6)	36(19.0)	34(18)	0(0.0)	189
B2	Your usual hobbies, recreational or sporting activities?	38(19.0)	0(0.)	85(45.0)	0(0.)	68(36.0)	189
B3	Getting into or out of bath?	141(74.6)	48(25.4)	0(0.)	0(0.)	0(0.)	189
B4	Walking between two rooms?	82(43.4)	0(0.)	0(0.)	71(37.6)	36(19.0)	189
B5	Putting on your shoes or shocks?	116(61.4)	36(19.0)	0(0.0)	0(0.0)	37(19.6)	189
B6	Squatting ?	36(19.0)	85(45.0)	68(36.0)	0(0.0)	0(0.)0	189

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		A	B	C	D	E	TOTAL
B7	Lifting an object, like a bag of groceries from the floor?	84(44.4)	0(0.0)	34(18.0)	71(37.6)	0(0.)	189
B8	Performing light activities around your home ?	71(37.6)	34(18.0)	0(0.0)	84(44.4)	0(0.)	189
B9	Performing heavy activities around your home ?	152(80.4)	0(0.0)	37(19.6)	0(0.0)	0(0.0)	189
B10	Getting into or out of a car ?	71(37.6)	0(0.)	0(0.)	0(0.)	118(62.4)	189
B11	Walking two blocks ?	34(18.0)	34(18.0)	84(44.40	0(0.)	37(19.6)	189
B12	Walking a mile ?	10455.0)	0(0.)	0(0.)	85(45.0)	0(0.)	189
B13	Going up or down 10 stairs [about 1 flight of stairs]?	85(45.00	36(19.0)	0(0.)	0(0.)	68(36.0)	189
B14	Standing for 1 hour?	36(19.0)	68(36.00	37(19.6)	0(0.)	48(25.4)	189
B15	Sitting for 1 hour?	116(61.4)	37(19.6)	36(19.0)	0(0.)	0(0.)	189
B16	Running on even ground?	152(80.4)	84(44.40	0(0.)	37(19.6)	84(44.4)	189
B17	Running on uneven ground ?	71(37.6)	0(0.)	0(0.)	0(0.)	71(37.6)	189
B18	Making sharp turns while running fast?	34(18.0)	0(0.)	118(62.4)	84(44.40	152(80.4)	189
B19	Hopping ?	104[55.0)	37(19.6)	37(19.6)	0(0.)	71(37.6)	189
B20	Rolling over in bed ?	85(45.00	36(19.0)	0(0.)	0(0.)	34(18.0)	189

Table 2: Prevalence of knowledge and perception of participant on hamstring injury with percentage.
*A-Extreme difficulty or Unable to perform activity .
*B-Quite a bit of difficulty .
*C-Moderate difficulty.
*D-A little bit of difficulty.
*E-No difficulty.

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	Male	Female
Moderate	75	43
Severe	44	27
Mild	0	0

Table 3: Chi-Square test Gender and endurance of hamstring injury
P-Value = 0.014

	20-29	30-39	39-40
Moderate	74	36	8
Severe	44	22	5
Mild	0	0	0

Table 4: Chi-Square test different age-group and endurance of hamstring injury
P-Value = 0.034

	Daily	Alternative	Weekly	Others	Total
Moderate	37	22	42	17	118
Severe	28	21	13	9	71
Mild	0	0	0	0	0

Table 5: Chi-Square test on number of times play/train and endurance of hamstring injury
P-Value = 0.046

Chi-square analysis of test independence/Association is also computed to check the association between Gender and their performance scores. With a P-value of 0.014 0.05, we fail to reject the Null Hypothesis at α = 0.05 levels of significance, based on this, there exists enough evidence to conclude that Gender and their response to a hamstring injury are associated.Likely Age group response to hamstring injury with P-value = 0.034 is also associated. Eventually, the chi-square P-value of 0.046 between response to hamstring related injury against a number of times they play/train is also associated.

DISCUSSION

It has been analysed that the prevalence of hamstring injuries among university athletes. In response to the question, respondents age Among these, 47% are between the age of 20-29, 45.2% are between 30-39 and 7.5% of respondents fall under the age group of 39-40. From this, it is clearly shown that youngsters of age between 20-29 experience the prevalence of hamstring injury among university athletes. This means the only youngster play a major role in university sporting activities.The previous studies/articles published by the following authors;Psychosocial factors and sports injuries: Meta-analyses for prediction and prevention, Published by A. Iverson, Johnson with their associate in the year 2017. Which concluded that psychosocial variables, as well as psychologically based interventions, can influence injury risk among athletes[31].Mediating effects of Peripheral vision in the life event stress/Athletic injury Relationship by Trace J. Rogers, D. Landers published in the year 2005; Results showed LES, N -LES and psychologically coping skills significantly contributed to the prediction of occurrence of athletic injury[22].Self - reported psychological characteristics as risk factors for injuries in female youth football published by K Steffen[1]., AM Pensgaard, R Bahr in the year 2009; who comes to concluded that, a perceived mastery climate and high level of life stress were significant predictor for new injuries in a cohort of young female football players[23].Extended sitting can cause hamstring tightness; by FATIMA GHULAM and her associate published in the year 2017. they concluded that, tightness of hamstring is observed in majority of the students. Long duration sitting can be a contributory factor in hamstring tightness[25].Nordic hamstring exercise (NHE) inclusion in injury prevention program; it's a systematic review and Meta-analysis of 8459 athletes published by Nicol van Dyk1,Fearghal P Behan2, Rod Whiteley in the year 2019; which concluded that , program that included the NHE reduces hamstring injuries by up to 51%. The NHE essentially halves the rate of hamstring injuries across multiple sports in different athletes[24].Based on these studies/researches, we came to observe that both Psychosocial, Psychological coping skills, Environmental factors leading to stress as well as prolonged sitting in the classrooms contributed to the hamstring strain and tightness which bring about injuries on hamstring muscles in different athletes of the university.Certain training programme plans need to be considered for the wellbeing and full participation of these athletes in order to stay active for a prolonged period of time. In most of our respondents, the majority complaints of moderate to severe symptoms and this indicates that all these psychosocial variables, psychological coping skills, environmental factors, prolong sitting in classrooms has major effects and increases the level of life stress on these athletes.

CONCLUSION

The study reveals that most athletes do not complain of mild hamstring-related injury so there is a need for better awareness of proper guidelines while engaging in sports activities. Of all based on the Chi-square test of independence, there is a strong association between time duration and severity of symptoms. As the time duration of practice increases the severity of symptoms decreases.

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