

## Research Article

# Influence of Kinesiophobia following Lower Limb Injuries in Physical Education and Sports Science Students

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## Article Info

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## Abstract

**Background:** Physical education and sports science students undergo physical training as a part of their curriculum and participate in competitive-level sports, including tournaments or championships, to further their career training. Lower limb injuries, including sprains, strains, joint soft tissue injuries, are more common among students. With lower limb injury, students could face impairments and psychological consequences that can affect the rehabilitation outcomes and the return to physical activity. Kinesiophobia acts as a barrier to recovery and to functional restoration.**Objective:** The primary aim of this study was to assess the influence of kinesiophobia among Physical Education and Sports Science students with a history of lower limb injuries.**Methods:** This study was designed as a cross-sectional study to investigate influence of kinesiophobia among Physical Education and Sports Science students of Tamil Nadu Physical Education and Sports University, Chennai, Tamil Nadu, India. The Tampa Scale of Kinesiophobia questionnaire was mailed to all the students in a Google Form after obtaining informed consent. The Google form included the student's basic demographic data, their level of sports participation, types of sports participation, occurrence of sports injury, and the Tampa Scale of Kinesiophobia to assess their fear of pain.**Results:** 171 students have completed the survey, with 54.4% being male, and 34.8% were between 19 - 21 years old. Lower limb injuries had occurred in 53.8% of participants at least once. Lower limb injury was mainly associated with sports like Kabaddi (30.8%), and the level of participation was at the intercollegiate level (39.8%), with 93% of students participating in competitive sports. High levels of kinesiophobia were detected in 43.7% of University student athletes irrespective of departments. The student athletes of both experimental group who had been exposed to injuries like sprain, strain and selection of sports have no significant variance in the high levels of kinesiophobia.**Conclusion:** University student athletes with a lower limb injury were insignificant to have greater risk of developing kinesiophobia. The results showed that there were no significant differences in Tampa Scale of Kinesiophobia scores in relation to the demographic and injury-oriented characteristics among the physical education and sports science students stating that the moderate kinesiophobia was evenly distributed among the subjects.

## 1. Introduction

Participation in sports is a part and parcel of curriculum for the students being enrolled in the program of physical education and sports science. Sports can be an inspiration with benefits not only in terms of health and fitness but also focusses up on academic achievement for the student community [1]. Even though sports have a positive part of student career, it can also have an adverse effect on players by landing in an injury due to heavy competition and peer pressure which can occur in amateur and professional players [2]. Sports players will have to face injury occurrence in their career be it as competition or recreation level [3].

Injuries to lower limb in comparison with the other body segments are more prevalent in the history of sports. The most common injuries were sprain particularly involving ankle and knee complex, muscle strain involving quadriceps, hamstrings and calf muscle, fractures, dislocations, bursitis around knee and ankle complex, tendinitis, overuse injuries, fascial tightness and skin injuries [4].

In developing countries like India, the most popular sports are Cricket, Football, Hockey, Kabaddi, Volleyball, Handball, Basketball, Athletics and martial arts in the intercollegiate and interuniversity level of sports participation. Physical Education and Sports Science students are having courses on sports injury management and rehabilitation in their curriculum. The need for understanding the immediate management of sports injuries [5] and stages of rehabilitation are mandatory for them. Sports which has the requirement of skills like speed, running, pivoting, balance, jumping, landing, coordination, acceleration, deceleration, agility, and power are the predisposing factors related to the etiology of sports injuries prevalence [6].

Kinesiophobia is more common in sports participants as a debilitating irrational fear of motion due to sudden onset of pain or injury [7, 8]. Tampa Scale of Kinesiophobia is a self-administered tool used by medical professionals to assess the negative affective association of fear of pain and discomfort which may lead to the development of automated avoidance behavior that will end the interest of sports players to involve in sports [9]. In most of the instances, kinesiophobia may be overlooked in relation to criteria for return to sports [10]. This paved the way for incomplete rehabilitation or recurrence of sports injury or even an athlete quits the sports activities due to the phobic state of mind [11].

The primary aim of this study was to assess the influence of kinesiophobia among Physical Education and Sports Science students of Tamil Nadu Physical Education and Sports Students with a history of lower limb injuries.

## 2. Subjects, Methods and Procedures

This study was designed as a cross-sectional study to investigate influence of kinesiophobia among Physical Education and Sports Science students of Tamil Nadu Physical Education and Sports University, Chennai, Tamil Nadu, India. The Tampa Scale of Kinesiophobia questionnaire was mailed to all the students of Department of Physical Education and Sports Science Program via a Google Form after obtaining informed consent. The Google form included the students' basic demographic data, their level of sports participation, types of sports participation, occurrence of sports injury, and the Tampa Scale of Kinesiophobia to assess their fear of pain.

This study incorporated Tampa Scale of Kinesiophobia 17 item questionnaire developed by Miller and his associates [12], to assess the fear of movement and physical activity [12]. The scores were marked using a Likert scale ranging from Strongly agree implied as Score 1 to Strongly disagree implied as Score 4. The following question numbers like 4, 8, 12 and 16 are calculated in reverse scoring pattern. The degree of cutoff score to determine kinesiophobia was High Phobia for scores greater than 37 and Low Phobia for scores lesser than 37 [1].

The obtained data were analyzed using the Statistical Package for the Social Sciences software, version 26. Descriptive statistics were shown as percentages for categorical variables, and as mean plus standard deviations for continuous variables. A univariate analysis was conducted to determine the factors that influence kinesiophobia. Anova was performed to compare the means of the two experimental groups in relation to kinesiophobia.

## 3. Results and Discussion

171 students have completed the survey, with 54.4% being male, and 34.8% were between 19 - 21 years old. Lower limb injuries had occurred in 53.8% of participants at least once. Lower limb injury was mainly associated with sports like Kabaddi (30.8%), and the level of participation was at the intercollegiate level (39.8%), with 93% of students participating in competitive sports. Knee Joint and Ankle joint are the most commonly involved joints. Grade I muscle and ligament injury are more prevalent in injury due to sports participation. Participants who have not got any injury in lower limb were excluded in statistical analysis. The Demographic characteristics of the variable were given in the Table 1.

The bar diagram presents the mean values with standard deviations for 17 item Tampa Scale of Kinesiophobia among the 92 participants. The average scores vary from Mean of 2.37 (SD = 0.78) for Item number 6 to Mean of 3.17 (SD = 0.70) for Item number 2. This suggested the presence of moderate degree of kinesiophobia in the study population. More items in the questionnaire including Item number 2, 5, 9, 11, and 15, showed somewhat higher mean scores which indicated the confirmation of movement-related fear and pain-avoidance belief. On the contrary, Item numbers 6, 8, and 17 documented lower mean values. The analysis of the standard deviation scores exposed greater distribution for Item numbers 8, 9, 13, and 17, indicating significant unevenness in subject's responses to the questionnaire. In line with the above, the analysis of the overall Tampa Scale of Kinesiophobia score showed a mean total score of  $M = 48.53$  ( $SD = 9.88$ ). This total score showed the collected impact of all scale items indicating a moderate level of kinesiophobia among subjects.

**Table 1:** The Demographic characteristics of Subjects (n=171)

<b>Variables</b>	<b>(%)</b>
<b>Age Group</b>	
17 – 19 years	25.6%
19 – 21 years	34.8%
21 – 23 years	26.2%
23 – 25 years	13.4%
<b>Gender</b>	
Male	54.4%
Female	45.6%
<b>Experimental Group - Department</b>	
Department of Physical Education	72.5%
Department of Sports Sciences	27.5%
<b>Sports Specialization</b>	
FOOTBALL	13.5%
CRICKET	21.3%
VOLLEYBALL	8.5%
KHO KHO	7.1%
ATHLETICS	12.4%
KABADDI	30.8%
HOCKEY	6.4%
<b>Level of Sports Participation</b>	
School Level	34.7%
Inter Collegiate Level	39.8%
Inter University Level	25.5%
<b>Types of Sports Participation</b>	
Competitive Level	93%
Recreational Level	7%
<b>Programme of Study</b>	
Undergraduate Level	57.9%
Post Graduate Level	42.1%
<b>Occurrence of Lower Limb Sports Injury</b>	
Yes	53.8%
No	46.2%
<b>Part of Lower limb injured in Sports</b>	
Hip Joint	4.7%
Knee Joint	45%
Ankle Joint	32.5%
Thigh Region	1.8%
Leg Region	3.5%
Foot	12.5%
<b>Type of Lower limb injury in Sports</b>	
Ligaments	32.5%
Muscles	38.7%
Bones	12.8%
Joints	14.6%
Tendons	0.9%
Other injuries	0.5%
<b>Grade of Lower Limb Injury</b>	
Grade I	73.7%
Grade II	21.4%
Grade III	4.9%

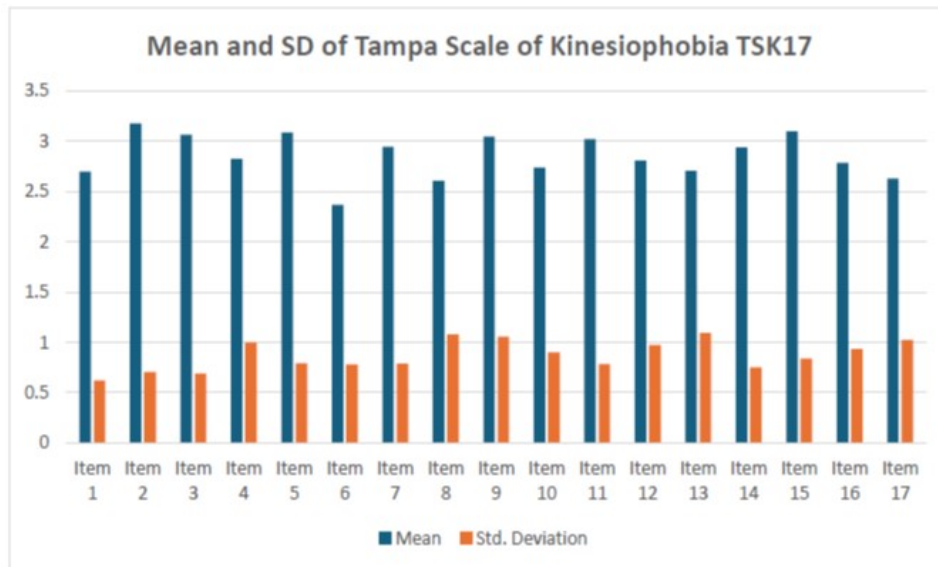


Figure 1: The Means and SD scores of 17 item Tampa scale of Kinesiophobia

Table 2: The ANOVA of the two experimental groups in relation to Kinesiophobia

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	.604	1	.604		
	Within Groups	112.385	90	1.249	.484	.488
	Total	112.989	91			
Gender	Between Groups	.330	1	.330		
	Within Groups	21.355	90	.237	1.389	.242
	Total	21.685	91			
Department	Between Groups	.303	1	.303		
	Within Groups	16.947	90	.188	1.607	.208
	Total	17.250	91			
Sports Specialization	Between Groups	7.049	1	7.049		
	Within Groups	1017.908	90	11.310	.623	.432
	Total	1024.957	91			
Level of Sports Participation	Between Groups	.082	1	.082		
	Within Groups	143.776	90	1.598	.052	.821
	Total	143.859	91			
Types of Sports Participation	Between Groups	.012	1	.012		
	Within Groups	12.543	90	.139	.083	.774
	Total	12.554	91			
Programme of Study	Between Groups	.112	1	.112		
	Within Groups	22.355	90	.248	.451	.503
	Total	22.467	91			
Part of Lower limb injured in Sports	Between Groups	.498	1	.498		
	Within Groups	116.372	90	1.293	.385	.536
	Total	116.870	91			
Type of Lower limb injury	Between Groups	.017	1	.017		
	Within Groups	102.635	90	1.140	.015	.902
	Total	102.652	91			
Grade of Lower Limb Injury	Between Groups	.069	1	.069		
	Within Groups	57.789	90	.642	.108	.743
	Total	57.859	91			

Significance at  $p < 0.05$  level.

The above Table 2 represent the ANOVA score stating that whether the Tampa Scale of Kinesiophobia scores were different based on the selected demographic and subject injury-oriented factors such as age, gender, department, level of sports participation, and Segment injured, type and grade of injury. The results showed that there were no significant differences in kinesiophobia scores for any of the demographic and injury-oriented variables studied of the physical education and sports science students.

The implication of this study was to include the study of kinesiophobia irrespective of demographic characteristics in consideration for return to sports [13].

## 4. Conclusion

Based on the results after statistical analysis, there were no significant differences in Tampa Scale of Kinesiophobia scores with respect to demographic and injury-related characteristics among physical education and sports science students, indicating that kinesiophobia was evenly distributed among the subjects. More emphasis should be given to students in the prevention of recurrent injuries, which may help to reduce the incidence of kinesiophobia.

### Article Information

**Disclaimer (Artificial Intelligence):** The author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.), and text-to-image generators have been used during writing or editing of manuscripts.

**Competing Interests:** Authors have declared that no competing interests exist.

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