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COMPARATIVE ANALYSIS OF FEAR OF REINJURY BETWEEN ACUTE AND OVERUSE INJURIES DURING THE RETURN TO SPORTS PHASE OF REHABILITATION: GENDER DIFFERENCES

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Abstract
This study aimed to evaluate athletes with acute and overuse injuries' fear of reinjury, measured as kindesophobia, during the return to sports phase of rehabilitation. Additionally, gender differences within these injury categories were investigated. At the Sports Authority of India Training Centre Bhiwani, Mundhal Kalan Akhada Bhiwani, Bhim Stadium Bhiwani, and Rajiv Gandhi Stadium Rohtak, data were collected from injured sportspersons. 30 injured sportspersons completed the Tampa Scale for Kinesiophobia (TSK-11) assessment. The findings showed that acute injuries had a considerably higher kinesiophobia score than overuse injuries. Within either injury group, there were no discernible gender differences. The significance of customised psychological assistance in sports injury recovery programs is shown by these findings.

Keywords: Kinesiophobia, acute injuries, overuse injuries, return to sports, gender differences, rehabilitation, fear of reinjury.

Introduction

A extreme and illogical fear of physical activity and movement, kinesiophobia (also known as fear of reinjury) stems from a feeling of vulnerability to traumatic injury or injury recurrence. Kinesiophobia may significantly affect an athlete's capacity to return to play following an injury and throughout their subsequent rehabilitation, per recent research in sports medicine and athletic health care (Korie et al., 1990). Returning to sports after an injury has been linked to a decline in athletic confidence and a fear of getting injured again.

Fear of re-injury can be shown in behaviour in a number of ways, including reluctance, holding back, exerting less effort than necessary, avoiding situations that could cause another injury, and bandaging the damaged area when playing sports. Sports performance and performance satisfaction may be impacted by these behaviours. Kinesiophobia is a profound, illogical, and restrictive dread of movement brought on by an extreme injury and the potential for further injury. Although there is a

wide spectrum of psychological reactions to damage, from moderate and subtle to severe and incapacitating illness like kinesiophobia, terms that define these powerful reactions to trauma are helpful. Rather than dismissing kinesiophobia, it is imperative that coaches, parents, and medical professionals show the thought, compassion, and understanding that less severe forms of injury-related anxiety warrant. This is especially true in contact sports. Despite common sense, athletes frequently suffer from a significant fear of reinjury. Although phobias are persistent conditions, many of the worries associated with return to sport can be resolved in a few days or weeks rather than months or even years. Fear, like all emotions, has its uses since it provides us with information about how we're performing in respect to the challenges and possibilities in our environment. It is the duty of the sports trainer to determine whether the athlete is physically and psychologically ready to compete again, as returning an athlete to competition too soon could cause further injury. (Stiller-Ostrowski.,2014).

As to the 2012 IOC manual on sports injuries, a sports injury is characterised as "damage to the body tissues that occurs as a result of sport or exercise." Impulsive damage to previously healthy tissue occurs. Acute injuries are caused by abrupt stress to the tissue, and they manifest their symptoms nearly instantly. The idea here is that the force applied to the tissue (bone, muscle, tendon, ligament, etc.) at the time of injury is greater than the tissue's strength. Acute injuries are frequently caused by direct or indirect forces. The site of the injury (bone, cartilage, ligament, muscle, bursa, tendon, joint, nerve, or skin) and the type of damage (fracture, dislocation, sprain, or strain) can be used to categorise acute injuries. The term "overuse injury" is often used in the field of sports medicine to refer to a group of injuries that result from recurrent micro-traumas rather than from a single occurrence of damage (van Wilgen & Verhagen, 2012). The term "overuse" is utilised because improper tissue loading, such as an excessive amount or volume of load or inadequate recovery in between loading bouts, is typically what triggers the start of this kind of injury (Bennell et al., 1996). In sports medicine, other terms that have been used interchangeably are "gradual-onset injury" (Fuller, 2010). "Sports illness," "overuse syndrome" (Timpka et al., 2014). Overuse injuries can be classified into 4 stages: (1) pain in the affected area after physical activity; (2) pain during the activity, without restricting performance; (3) pain during the activity that restricts performance; and (4) chronic, unremitting pain even at rest (Brenner,2007).

Predictive Indicators of Overuse Injuries in Adolescent Endurance Athletes: Runners appear to be the primary contributors for most injuries (up to 80%), with almost two-thirds of these injuries happening in the lower extremities and being the result of overuse. While specific injury incidence in youth track and field varies throughout disciplines, senior athletics has recorded incidence rates of 3.9 injuries/1000 practice hours; high school track and field athletes have reported an overall incidence of 0.89 injuries/1000 hours. Furthermore, compared to other sports, long-distance runners had a 19-fold increased incidence of injuries (17/1000 hours). Some common overuse injuries are shin splits stress fractures and plantar facilities. Four phases usually comprise sports rehabilitation: the first is pain management; the second is enhanced flexibility; the third phase focuses on returning and increasing strength, endurance, agility, balance, and proprioception; and the fourth is going back to sports. Phase I aims to control inflammation and/or manage pain. Interventions include Joint Mobilisation Grade I–II, Electrophysical modalities, PRICE (Protect, Restrict activity, Ice, Compression, and Elevation), Massage Therapy, Isometric exercises, Stretching, and Aerobic exercise in the area free of injury. Phase II's goal is to restore flexibility, or range of motion. The following types of interventions are available: closed kinetic chain, active exercise, contract relax, minimal resistance/loading exercise, Grade III–V joint mobilisation, and exercise stabilisation. Phase III's objective is to improve muscle strength, stamina, agility, etc.

Interventions include open kinetic chain activities, endurance training, muscle strengthening exercises with increasing weight on the damaged area, and beginning basic agility/plyometric exercises for

sports like squats and jogging. Phase IV's goal is to return to sports and physical activity. Maintain your adaptability and fortification. Advanced training for power, dexterity, and agility, such plyometrics advanced training in running with more resistance. Utilise particular sports exercises based on the requirements of the sportsperson. Before starting sports again, make sure your body and joints are protected. This phase Should be done with return to sports test (Anggiat,2021). Although kinesiophobia in sports injuries has been extensively studied, there is no study that compare acute injuries to overuse injuries in relation to Kinesiophobia. Furthermore, not enough research has been done on how gender differs in kinesiophobia throughout the phase of returning to sport. The purpose of this research is to close these knowledge gaps and offer insights that may result in more individualised rehabilitation strategies.

Objectives

1. To compare the differences in kinesiophobia between acute and overuse injury scores.
2. To compare the differences in kinesiophobia between male and female athletes with acute injuries.
3. To compare the differences in kinesiophobia between male and female athletes with overuse injuries.

Hypotheses

1. There will be no difference in kinesiophobia scores between athletes with acute injuries and those with overuse injuries.
2. There will be no difference in kinesiophobia scores between male and female athletes with acute injuries.
3. There will be difference in kinesiophobia scores between male and female athletes with overuse injuries.

Methodology

Sample

The sample included 30 injured sportspersons from the districts of Bhiwani and Rohtak in Haryana (15 acute injuries, including 10 males and 5 females) and 15 overuse injuries, comprising 9 males and 6 females. Purposive sampling was used to obtain the sample. The Sports Authority of India Training Centre in Bhiwani, Mundhal Kalan Akhada in Bhiwani, Bhim Stadium in Bhiwani, and the Rajiv Gandhi Stadium in Rohtak were the locations of the participants. Only included individuals who were engaged in their fourth phase of injury rehabilitation program. The return to sports is the fourth phase's main objective (Anggiat, 2021).

Inclusion criteria

Young adults will only be included in the sample if they are –

- Age group 18– 30.
- Participants in their fourth phase of an injury rehabilitation program who were sportspersons with injuries. The return to sports is the fourth phase's main objective (Anggiat, 2021).

Exclusion criteria

The following conditions will exclude young individuals from the sample:

- Pre-existing psychological diagnoses, such as major depressive disorder, bipolar disorder, schizophrenia, etc.
- Individuals who, in the previous six months, have gone through major traumatic events (such as the death of a loved one or natural catastrophes).
- Those who report abusing or being dependent on substances (drugs, alcohol) will not be allowed to participate.

- Those who suffer from severe physical illnesses (such as cancer or cardiovascular disorders) that could limit their capacity to participate in sports or negatively impact their mental health will be excluded.
- Individuals who have undergone other sports injury surgery related to sports or who have other serious physical injuries will be excluded from the study.

Study Tool

Tampa scale of Kinesiophobia-11 (Woby et al.,2005) This scale consists of 11 items rated on a 4-point scale. This scale assesses fear of movement/reinjury.

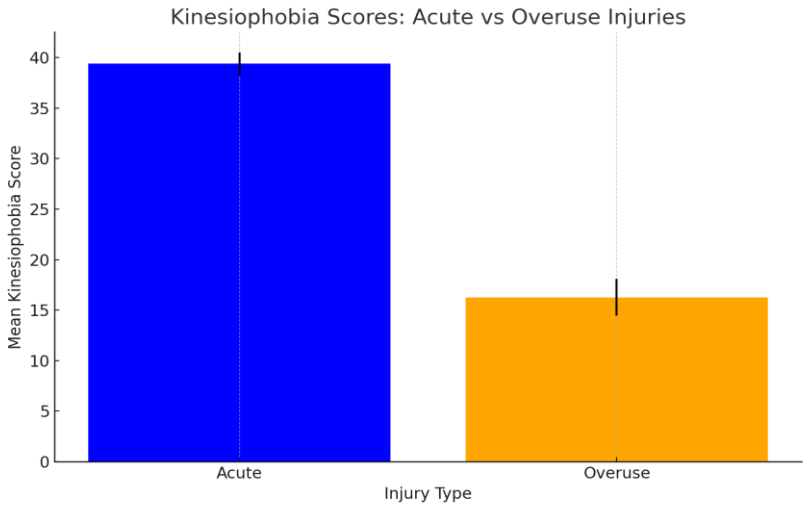
Procedure

The objectives of the study were explained to the participants, and a rapport was established with them. After that, informed consent was taken by the subjects. Participants completed the TSK-11 during the fourth phase of sports injury rehabilitation known as return to sport. Demographic information and details about sports-related injuries were also collected. Independent samples t-tests were used to compare the kinesiophobia scores between the groups. Levene's Test for Equality of Variances was conducted to ensure the homogeneity of variances.

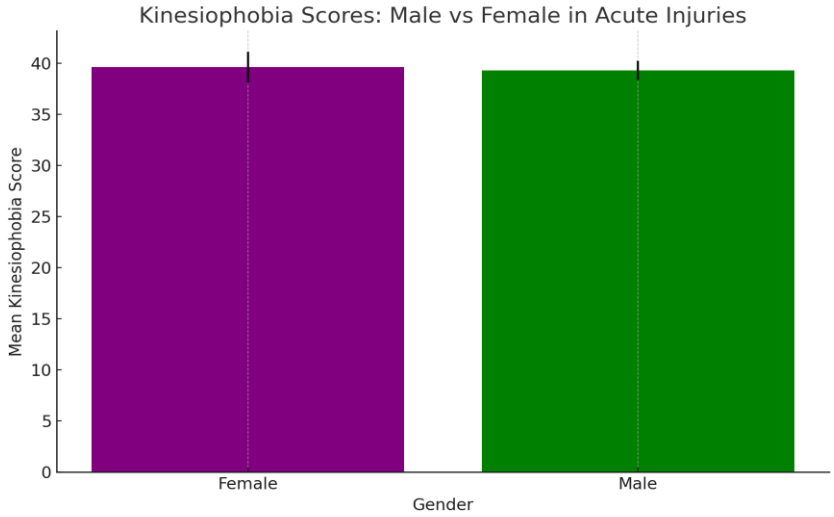
Results

Graphical Representation of Data

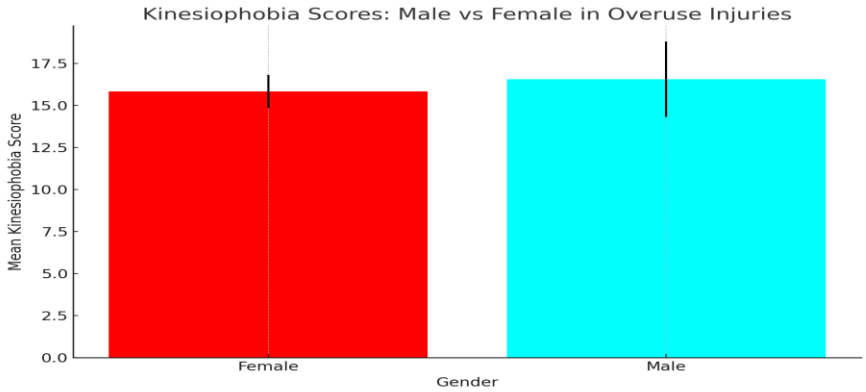
Kinesiophobia Scores: Acute vs Overuse Injuries



Kinesiophobia Scores: Male vs Female in Acute Injuries



Kinesiophobia Scores: Male vs Female in Overuse Injuries



Data Analysis and Data Interpretations

1. To compare the differences of kinesiophobia between acute and overuse injury scores.

T-Test

Group Statistics

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
Kinesiophobia	Acute	15	39.4000	1.12122	.28950
	Overuse	15	16.2667	1.83095	.47275

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Kinesiophobia	Equal variances assumed	2.401	.145	-.736	13	.475	-.72222	.98119	-2.84195	1.39750
	Equal variances not assumed			-.851	11.720	.412	-.72222	.84838	-2.57560	1.13115

The t-test results reveal a significant difference in kinesiophobia scores between athletes with acute injuries and those with overuse injuries. The t-value is 45.94, with a p-value less than 0.01, showing that there is a statistically significant difference in kinesiophobia between the two groups. Specifically, athletes with acute injuries had a substantially higher mean kinesiophobia score of 39.40 (SD = 1.12) than those with overuse injuries, who had a mean score of 16.27 (SD = 1.83). This significant difference shows the larger psychological impact of acute injuries, which is most likely due to their unexpected and traumatic nature, resulting in a heightened fear of re-injury.

2. To compare the differences between male and female of kinesiophobia in acute injuries.

T-Test

Group Statistics

	VAR00013	N	Mean	Std. Deviation	Std. Error Mean
kinesiophobia	Female	5	39.6000	1.51658	.67823
	Male	10	39.3000	.94868	.30000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
kinesiophobia	Equal variances assumed	1.069	.320	.475	13	.643	.30000	.63185	-1.06502	1.66502
	Equal variances not assumed			.405	5.623	.701	.30000	.74162	-1.54461	2.14461

When comparing kinesiophobia scores between male and female athletes with acute injuries, the t-test yields a t-value of 0.34 and a p-value greater than 0.05, indicating that the difference is not statistically significant. Males had a mean score of 39.30 (SD = 0.95), whereas females had a significantly higher mean score of 39.60 (SD = 1.52). The tiny difference in these scores indicates that male and female athletes with acute injuries have similar degrees of kinesiophobia, and gender has no meaningful effect on the fear of re-injury in the context of acute injuries.

3. To compare the differences between male and female of kinesiophobia in overuse injuries3.

T-Test

Group Statistics

	VAR00008	N	Mean	Std. Deviation	Std. Error Mean
Kinesiophobia	Female	6	15.8333	.98319	.40139
	Male	9	16.5556	2.24227	.74742

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Kinesiophobia	Equal variances assumed	2.401	.145	-.736	13	.475	-.72222	.98119	-2.84195	1.39750
	Equal variances not assumed			-.851	11.720	.412	-.72222	.84838	-2.57560	1.13115

The t-test results for kinesiophobia scores in athletes with overuse injuries are 0.82 with a p-value better than 0.05, showing no statistically significant difference between males and females. Males had an average kinesiophobia score of 16.56 (SD = 2.24), whereas females had a somewhat lower mean score of 15.83 (SD = 0.98). The minimal difference of 0.73 across genders shows that, like acute injuries, gender has no significant effect on kinesiophobia levels among athletes with overuse injuries.

Discussion

This study was aimed at examining any gender variances in kinesiophobia among these injury groups as well as the variations in kinesiophobia, or the fear of reinjury, between athletes with acute and overuse injuries throughout the return-to-sport phase of rehabilitation. The study's conclusions point to important psychological ramifications for injured athletes, especially with relation to their fear of being injured again. Athletes with acute injuries and those with overuse injuries differed significantly in their kinesiophobia scores, according to the data. When comparing athletes with acute injuries to those with overuse injuries, the former group showed considerably greater kinesiophobia scores. The results of this study are consistent with the notion that acute injuries, which are frequently caused by an unexpected trauma or impact, might increase a person's feeling of vulnerability and fear regarding experiencing something similar again.

Acute injuries, like fractures or tears in ligaments, frequently have a more abrupt and severe beginning, which causes a more immediate psychological reaction that is marked by anxiety and fear (Bahr et al., 2012). Overuse injuries, in contrast, occur gradually as a result of repeated microtraumas. Overuse injury athletes may experience a reduction in their kinesiophobia scores as a result of growing accustomed to their symptoms and developing coping strategies over time (Van Wilgen & Verhagen, 2012). Because acute injuries are unexpected and frequently more traumatic, athletes experiencing them may have higher kinesiophobia scores. This is consistent with other research, which indicates that severe and unanticipated injuries are more likely to cause intense psychological reactions, such as despair, anxiety, and fear of getting injury again (Kori et al., 1990). The results of the study show that in order to assist athletes recuperating from acute injuries in managing their anxieties and enabling a more smoother return to sports, more focused psychological therapies are required. Regarding gender differences, the study indicated that among both the acute and overuse injury groups, there were no statistically significant differences in kinesiophobia scores between male and female athletes. Male and female athletes experienced comparable degrees of anxiety of reinjury in cases of acute injuries. Similarly, there were no gender-specific variations in kinesiophobia scores for overuse injuries. This study implies that the psychological effects of injury and the fear of reinjury may be more closely related to the type of injury than to the gender of the athlete, irrespective of gender. These results are significant because they reject some of the long-standing gender-based presumptions in sports psychology, which hold that cultural and socioeconomic factors may affect how men and

women handle injuries. The results of this study suggest that, in the case of kinesiophobia specifically, gender may not be a significant factor, despite some studies suggesting that female athletes may experience higher levels of psychological distress following an injury due to various sociocultural factors, such as expectations of toughness or fear of career implications (Appaneal et al., 2009).

Limitations

1. **Limited Sample Size:** Only thirty athletes (15 with acute injuries and 15 with overuse injuries) made up the study's extremely small sample size. Because of the small sample size, the results cannot be applied to a larger group of athletes. The findings may not fully represent all sports, age groups, or potential levels, which limits how broadly the study's recommendations can be applied.
2. **Purposive Sampling Method:** Athletes were chosen for the study from particular sports training facilities in Bhiwani and Rohtak using a purposive sampling method. Selection bias may be introduced by this non-random sampling technique since the athletes that are chosen may have some traits in common that set them apart from the overall population of injured athletes. This approach can also reduce the study's external validity because athletes in other environments or geographical areas might not be able to use the results.
3. **Lack of Control for Confounding Variables:** Potential confounding factors that can affect kinesiophobia levels were not taken into consideration in this study. An athlete's fear of reinjury may be influenced by a variety of factors, including psychological toughness, social support, and they underwent. It is challenging to ascertain if the observed variations in kinesiophobia are exclusively attributable to the kind of injury without accounting for these factors.
4. **Cross-Sectional Design:** This study's cross-sectional design offers an overview of the degree of kinesiophobia at a particular moment (the fourth stage of rehabilitation). This design makes it impossible to investigate how a person's fear of reinjury develops over time or at different phases of their recuperation. To fully understand the dynamics of kinesiophobia and how it changes throughout the course of therapy, longitudinal studies are required.
5. **Limited Psychological Measures:** The study's sole psychological tool for measuring fear of reinjury was the Tampa Scale for Kinesiophobia (TSK-11). This scale may not adequately measure other pertinent psychological variables, such as depression, anxiety, or self-efficacy, which may also influence an athlete's rehabilitation experience, even if it is a validated tool for measuring kinesiophobia. A fuller comprehension of the psychological obstacles athletes confront during recovery might be obtained by a more thorough evaluation of psychological variables.
6. **Gender Differences Not Stated Upon:** Although the study did not uncover any statistically significant variations in kinesiophobia scores between the genders of the two injury groups, it did not investigate the underlying causes of these results. Richer insights into the lived experiences of male and female athletes would have been gained by a more thorough qualitative method, which might have also shown minute variations in coping strategies, psychological reactions, or cultural effects.

Future Suggestions

1. **Expand Sample Size and Diversity:** A larger and more varied sample of athletes from different sports, age groups, and competitive levels should be the goal of future research. A bigger sample size might improve the results' generalisability and offer a more thorough understanding of kinesiophobia in other sporting populations.
2. **Use Randomised Sampling approaches:** Future studies should use randomised sampling approaches that incorporate athletes from different training facilities and geographic regions in order to lessen selection bias. By using this method, it would be possible to make sure that the study sample is more typical of the overall group of injured athletes.
3. **Control for Confounding Variables:** Confounding factors such psychological toughness, social support, injury history, and the kind of rehabilitation program should be taken into account in future

research. Researchers can more clearly distinguish the impact of injury type on kinesiophobia and draw more reliable conclusions by accounting for these variables.

4. **Use Longitudinal Study Designs:** Future studies should make use of longitudinal study designs, which track athletes throughout the duration of their rehabilitation, in order to document the evolution of kinesiophobia. This would offer insightful information about how the fear of reinjury changes from the time of the initial injury to the point of returning to sports and beyond.
5. **Include a Wider Range of Psychological Measures:** To capture additional pertinent dimensions including motivation, self-efficacy, anxiety, and depression, future research should incorporate a more extensive battery of psychological assessments. A multifaceted strategy would offer a more comprehensive comprehension of the psychological elements impacting rehabilitation results.
6. **Qualitative Methods of Research:** In the future, qualitative techniques like focus groups and interviews may be used in research to gain a deeper understanding of the subtleties surrounding gender disparities and other psychological issues. These techniques might offer more in-depth understandings of athletes' individual experiences, coping mechanisms, and perspectives on injury and recuperation.

Conclusion

In the phase of recovery known as return to sport, this study offers important new insights into the variations in kinesiophobia that exist between athletes with acute and overuse injuries. The results demonstrate the necessity for injury-specific psychological support in rehabilitation programs, as athletes with acute injuries show considerably greater levels of kinesiophobia than athletes with overuse injuries. The lack of discernible gender differences in kinesiophobia within both injury groups raises the possibility that the kind and severity of the injury, rather than the gender of the athlete, may have a greater psychological influence.

The study emphasises how crucial It is to combine psychological therapies with physical rehabilitation in order to treat the fear of reinjury and encourage a fruitful return to sports. Nevertheless, the study's shortcomings—such as its small sample size, purposive sampling technique, and lack of confounding variable control—indicate that more investigation is required to confirm and build on these results. Future research can offer deeper insights into the psychological aspects of sports injury recovery and aid in the creation of more efficient rehabilitation plans for injured athletes by utilising more reliable research designs, bigger sample sizes, and thorough psychological evaluations.

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