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Fear of re-injury and its impact on performance in amateur basketball players using a self-made questionnaire

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Abstract
Background: Basketball is a highly complex and demanding game comprised various types of jumps, start acceleration, and sudden changes in movement direction, where the body of a basketball player is subjected to significant physical stress which, in the case of physical unpreparedness, may lead to sustaining injuries. The idea of re-injury can turn into a psychic problem by creating a fear of movement in the athlete and it affects the motivation, which is one of the performance parameters. Currently, there are no standardized or widely adopted measures to predict or assess the fear of re-injury in sports, making it a critical gap in athlete management and a pressing need for focused research and preventive strategies.
Objective: The study aims to find the prevalence of fear of re-injury and its impact on performance in amateur basketball players using a self-developed questionnaire.
Methods: A questionnaire-based, observational cross-sectional survey was conducted among amateur and recreational basketball players with a history of basketball-related injury during the preceding 12–15 months. A total of 104 valid responses from participants aged 14–30 years were analyzed. Data were collected using a self-developed 20-item Fear of Re-Injury Questionnaire (FRIQ), comprising psychological/cognitive and perceived physical-performance domains.
Results: The majority of participants demonstrated moderate fear and partial recovery, while a smaller proportion experienced severe fear and major impact. A statistically significant positive correlation was observed between the psychological and physical performance subscale scores (Pearson's $r = 0.59$, $p < 0.001$). Based on the provisional interpretation bands, the majority of the participants, 74 (71.2%), were classified under the Moderate Fear/Partial Recovery category.
Conclusion: The Fear of re-injury questionnaire shows a positive correlation between fear of re-injury and performance in amateur basketball players. According to the reliability analysis of the questionnaire, the Cronbach's alpha is 0.934 which shows excellent reliability.

Keywords: Fear of re-injury; amateur basketball players; performance

Introduction

Basketball is a dynamic team sport where two teams compete to score points by shooting a ball through a hoop on their opponent's side of the court. The game is characterized by fast paced action, strategic plays, and individual skills like dribbling and shooting. Basketball is a highly complex and demanding game comprised various types of jumps, start acceleration, and sudden changes in movement direction, where the body of a basketball player is subjected to significant physical stress which, in the case of physical unpreparedness, may lead to sustaining injuries [1].

Basketball continues to increase in popularity at all levels of play from recreational to professional and remains immensely popular worldwide. It appears to have the highest frequency of injuries among non-contact sports; it is often referred to as being more dangerous with a higher injury risk than other contact sports [2]. An amateur basketball player is an individual who plays basketball primarily for personal enjoyment, competition, fitness, or development, without receiving financial compensation or a professional contract for their participation. A sport related musculoskeletal injury has an immediate impact on their ability to move and participate in sports.

Injuries of lower extremities are more common than injuries of upper extremities. The most frequent types of injuries are injuries to the knee and ankle. Ankles and knees are constantly subjected to physical load during the game, making up over 50% of all injuries in basketball [1]. The idea of re-injury can turn into a psychic problem by creating a fear of movement in the athlete and it affects the motivation, which is one of the performance parameters. Kinesio phobia is a condition in which an individual experience a fear of physical movement and activity after an injury occurs. Fear of re-injury has been identified as one of the most important factors for not returning to sports after an injury [3].

Fear of reinjury term is commonly used during the later stages of rehabilitation where the patient is hesitant to participate in functional athletic movements. Fear of reinjury can be triggered in settings in which the athlete was initially injured [4]. Fear of movement and/or fear of reinjury can delay the return-to-Play (RTP) process and may negatively impact rehabilitation outcomes. For example, a fear of movement may lead to decreased muscular strength, increased postural sway, and impaired proprioception, perpetuating chronic conditions that hinder an athlete's athletic ability [4]. Fear of movement tends to increase pain-related fear and can be associated with safety-seeking behaviors, such as the avoidance of certain movements [4].

Materials and Methods

Study design and setting

This study was a survey-based study conducted over a period of 6 months in Pune, Maharashtra, India. This study received ethical clearance from Institutional Ethics Committee of PES Modern College of Physiotherapy, Shivajinagar, Pune-05. Written informed consent was obtained from all participants before enrolment to the study.

Selection criteria

A hundred and four amateur basketball players were recruited via purposive sampling. Eligibility criteria is as follows:

Inclusion criteria

- Age - 18 to 25 years
- Gender - both males and females
- Basketball players who have had a sports injury in the past 12-15 months

Exclusion criteria

- Any injuries sustained outside the game setting. For example- any road traffic accident, fall, trauma, etc.
- Athletes who have undergone any recent surgery other than an orthopaedic surgery.

Outcome measure

Fear of Re-injury Questionnaire (FRIQ) is a self-developed 20 item questionnaire which assess the psychological and physical performance of an athlete post injury and his readiness to play again.

Statistical analysis

Descriptive statistics characterised the sample. Pearson correlation tested continuous relationships. Independent-samples t-tests with Welch's correction compared two groups. One-way ANOVA compared Total Score across return-to-play duration categories. All tests used $\alpha = 0.05$ (two-tailed).

Results

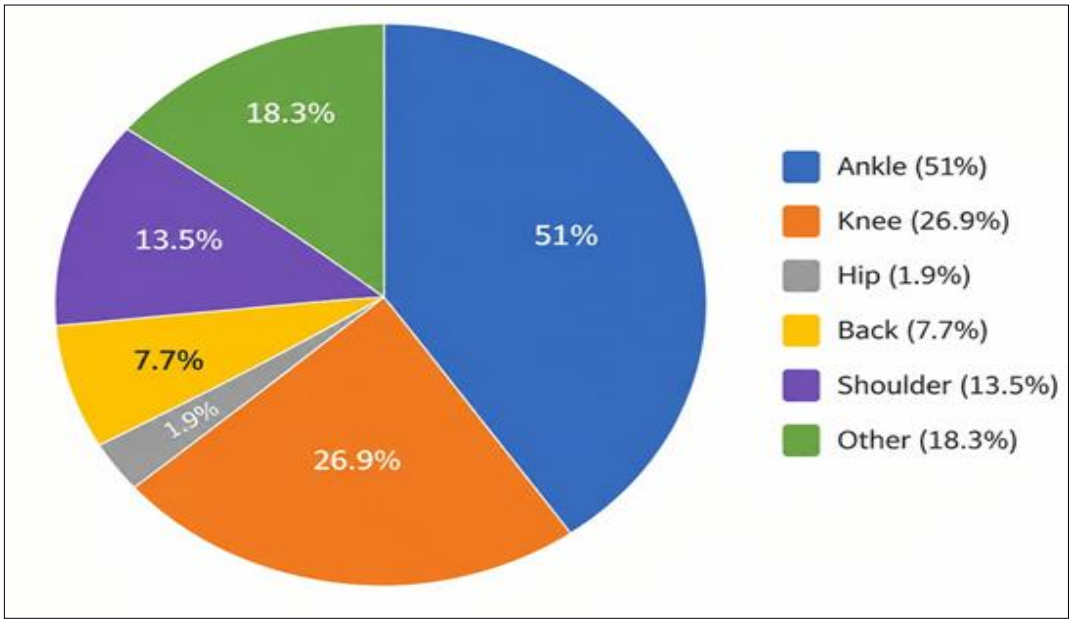


Fig 1: Distribution of Which Body Part was Injured the Most

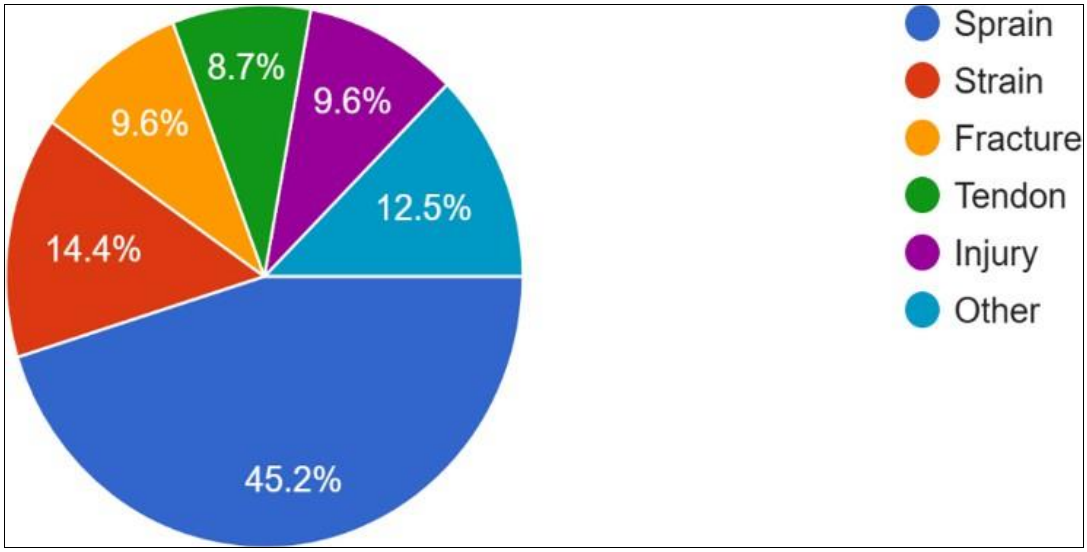


Fig 2: Distribution of Type of Injury

Band	Score Range	Interpretation
Severe Fear & Major Impact	20 – 47	Substantial impact; recommend structured psychological + physical re-integration support
Moderate Fear / Partial Recovery	48 – 76	Some residual fear and/or incomplete performance recovery; monitor and consider targeted intervention
No Fear & Full Recovery	77 – 100	Minimal residual fear; performance largely at pre-injury level

Fig 3: Scoring and Interpretation

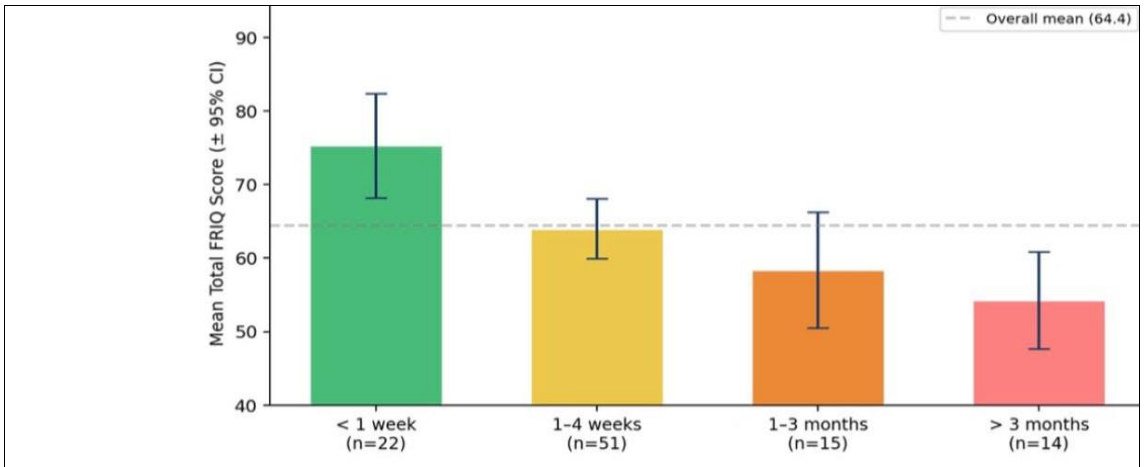


Figure 11. Mean Total Score (± 95% CI) by return-to-play duration.

Return-to-play group	n	Mean	SD
< 1 week	22	75.3	17.0
1 – 4 weeks	51	64.0	14.9
1 – 3 months	15	58.4	15.6
> 3 months	14	54.3	12.6

Fig 4: Total Score by Return to Play Duration

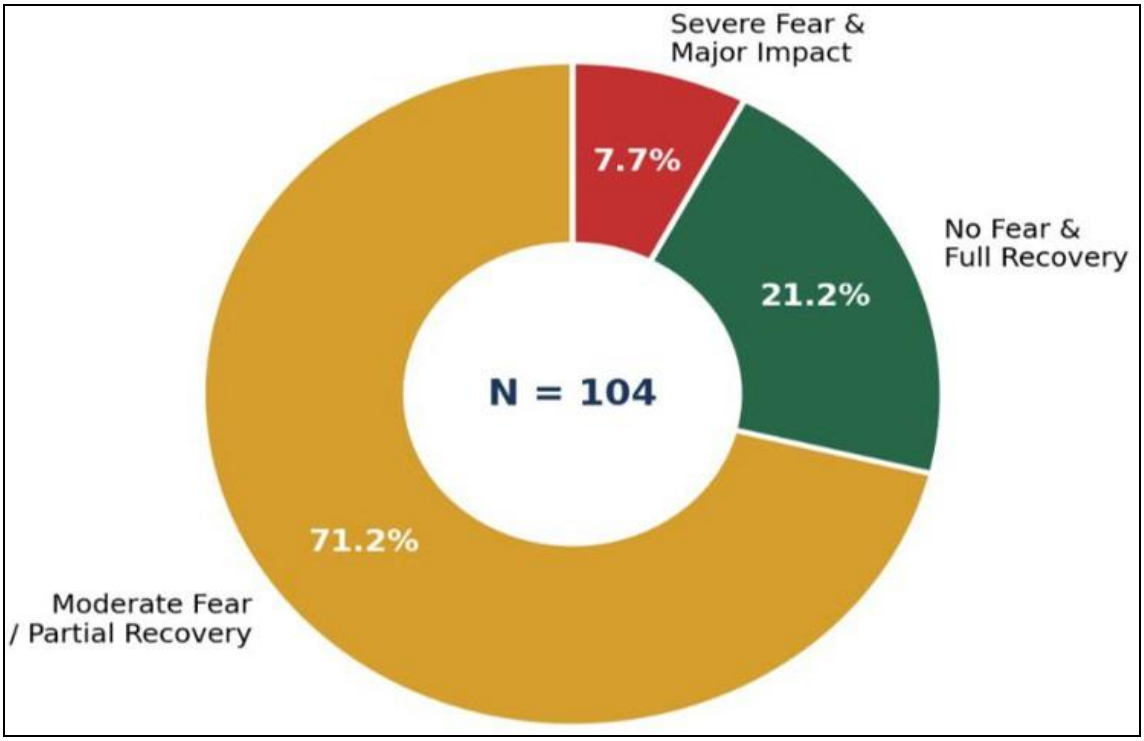


Fig 5: Final Result of the Questionnaire

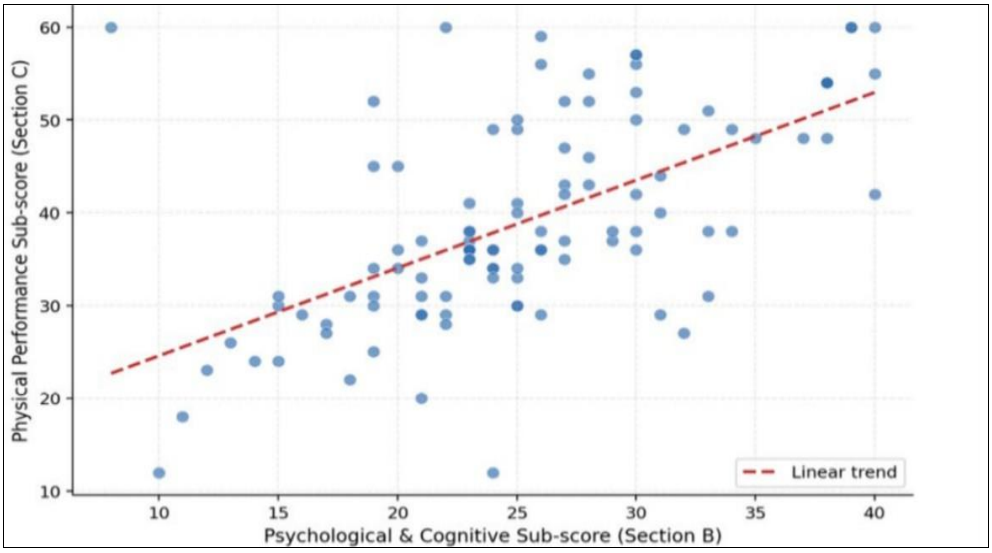


Fig 6: Relationship Between Psychological Fear and Physical Performance

Discussion

Fear of re-injury (also termed kinesiophobia or re-injury anxiety in the sports-rehabilitation literature) is a well-documented psychological barrier that can prevent athletes from returning to their pre-injury level of performance, even after full tissue healing. In jump-heavy,
multi-directional sports such as basketball — where landing, pivoting, cutting and rapid deceleration repeatedly load the ankle, knee and shoulder — the psychological dimension of recovery is frequently under-assessed relative to range-of-motion, strength and sport-specific testing.

Existing instruments such as the Tampa Scale of Kinesiophobia (TSK) and the
Injury-Psychological Readiness to Return to Sport (I-PRRS) scale have demonstrated the clinical relevance of this construct. However, few tools are tailored specifically to the movement demands and injury profile of amateur basketball. The present study therefore developed vizand applied a purpose-built 20-item Fear of Re-Injury Questionnaire (FRIQ) to quantify the extent and nature of fear among amateur basketball players who sustained a basketball-related injury in the preceding 12–15 months.
Čaprić, I.; *et al* Life 2024 concluded that the main contribution of this study is showing that the ankle joint and the knee are the most frequently injured in both genders. The most frequent forms of injury are ankle sprains and ligament strain.
Kvist, Joanna, and Karin Grävare Silbernagel 102.2 (2022) said in conclusion that fear influences rehabilitation after a sport injury and needs to be addressed. Directly after an injury, there are often negative emotions, including fear. Athletes with low levels of fear of reinjury progress easier to more advanced phases of rehabilitation33 and have the best functional outcomes. They also concluded that motivation is an important factor that predicts return to sport and helps athletes overcome the fear of reinjury to return to sport.
Hsu CJ, Meierbachtol A, George SZ, Chmielewski TL in their study concluded that fear of reinjury after a sports injury can negatively affect the recovery of physical impairments, reduce self-report function, and prevent a successful return to sport.The application of psychologically informed practice would be to measure fear of reinjury in the injured athletes and provide interventions to reduce fear of reinjury to optimize rehabilitation outcomes.
Ardern, Clare L., *et al* (2013) [12] concluded in their study that there is preliminary evidence that positive psychological responses are associated with a higher rate of returning to sport following athletic injury, and should be considered by clinicians during rehabilitation.

Conclusion

The FRIQ shows a positive correlation between fear of re-injury and performance in amateur basketball players.
According to the reliability analysis of the FRIQ, the Cronbach's alpha is 0.934 which shows excellent reliability.

Future scope

Larger sample sizes can be used to improve the generalizability of the findings beyond the current sample of 104 players.
Future studies can include objective physical-performance tests such as jump performance, agility, balance, strength, and change-of-direction tests to complement the self-reported performance scores.
The FRIQ could potentially be adapted for other sports with high demands for jumping, landing, pivoting, and rapid directional changes, after appropriate validation.
Longitudinal studies can assess how fear of re-injury changes throughout rehabilitation and after return to play, rather than measuring it at a single time point.

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