

A STUDY ON PREVALENCE OF SPORTS INJURIES OF KHO-KHO IN DIFFERENT AGE CATEGORIES

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Abstract – The prevalence, types, and causes of sports injuries among Kho-Kho players in various age groups were examined in this study. Data was gathered from 213 athletes (88 men and 125 women) who were divided into four groups: Under-14, Under-17, Under-19, and Senior. A standardized 45-item questionnaire created with expert input was used to gather data. The results showed that acute injuries were most prevalent (46.1%), followed by chronic injuries (24.41%), and both acute and chronic injuries in different places (29.58%). Bones accounted for 41.31% of injuries, with muscles (38.03%), ligaments (14.08%), and tendons (6.57%) following closely behind. The most common site of injury was the leg (29.6%), followed by the knee (13.6%) and the arm (6.4%).

Falling was the most common cause of injury (52.11%), while sprains were the most common injury type (45.07%). A significant percentage (92.96%) sought medical advice, primarily for previous injuries (64.32%). Both before and after treatment, recurrences of injuries were observed, and some athletes (40.38%) had side effects. These results emphasize the significant risk of injuries in Kho-Kho and the importance of adequate rehabilitation, appropriate training methods, and preventive measures.

Keywords – Sports injuries, Kho-Kho, frequency, acute, chronic injuries, sprains, bone injuries, rehabilitation.

Introduction

One of India's oldest and most traditional sports, Kho-Kho is ingrained in the country's social and cultural fabric. High-speed chases, abrupt direction changes, a lot of squatting and diving, and intense player-to-player physical contact are some of the game's hallmarks. Although Kho-Kho improves reflexes, agility, endurance, and teamwork, its high-impact and dynamic nature puts athletes at risk for frequent sports-related injuries. In addition to reducing physical performance, sports injuries can have long-term effects. Young athletes' developing musculoskeletal systems make them especially susceptible. Risks are increased in high-intensity contact sports like Kho-Kho by sudden movements, collisions, and frequent ground contact.

Although there is a wealth of study on international sports like football, cricket, and athletics, there are still few systematic studies on Kho-Kho. In particular, there is scant evidence about differences in injury prevalence by age.

Objectives

1. To ascertain the frequency of sports injuries among Kho-Kho athletes across various age groups.
2. To determine which injury types, sites, and causes are more prevalent.
3. To evaluate recurrence patterns and treatment-seeking behavior.
4. To offer suggestions for managing and preventing injuries.

Methodology Research approach:

To investigate the frequency and trends of sports injuries among Kho-Kho players, the study used a descriptive survey approach.

Participants:

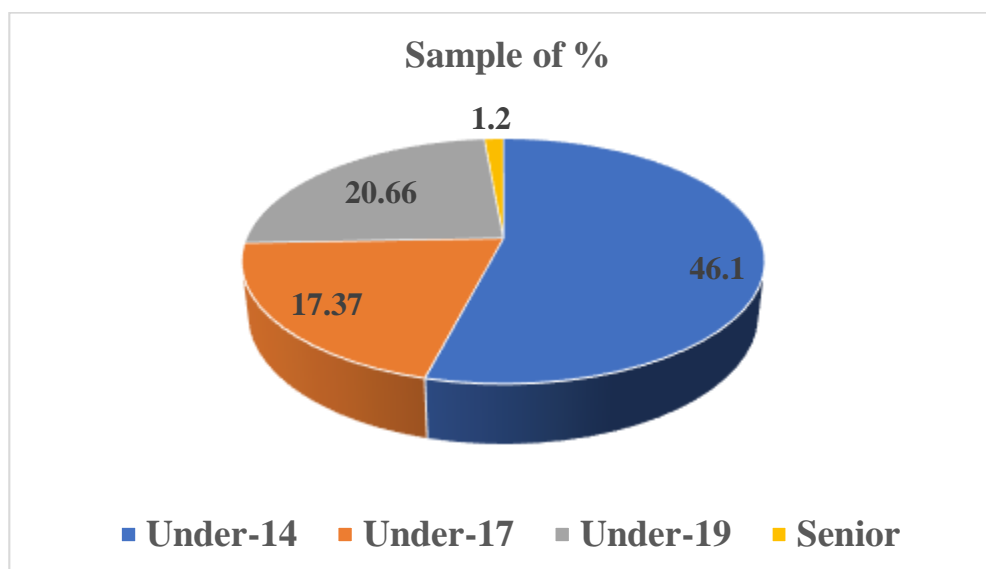
213 Kho-Kho athletes (88 men and 125 women) made up the sample. Players were divided into age groups:

Table 1: Sample Distribution by Age Category

Females represented 58.69% of the total sample, and males 41.31%.

Data Collection Tools:

Age Group	% of Sample
Under-14	46.1%
Under-17	17.37%
Under-19	20.66%
Senior	15.96%



In collaboration with sports medical specialists, physiotherapists, and supervisors, a 45-item structured questionnaire was created.

Procedure:

Kho-Kho tournaments at the district and state levels were used to gather data. After giving their informed consent, players voluntarily completed the questionnaire.

Data Analysis:

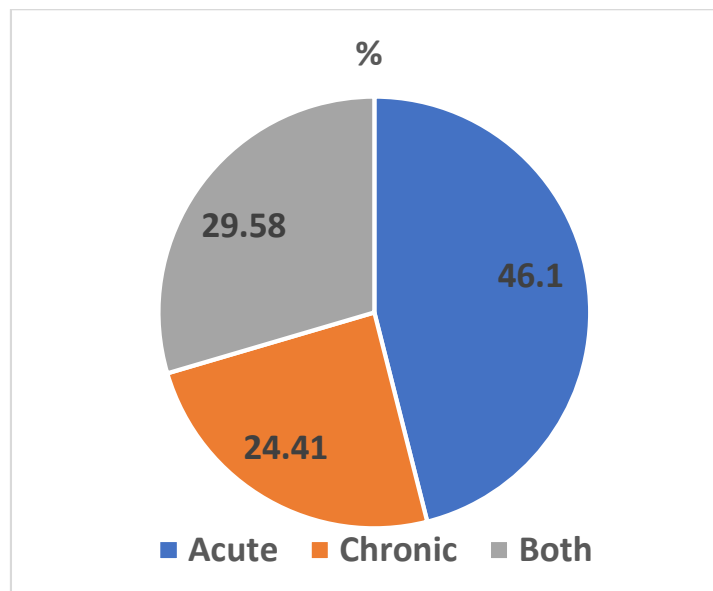
Frequency and percentage were used as descriptive statistics. Graphical representation and tables were employed to display findings.

Results

Type of Injury

Table 2: Distribution of Injury Types:

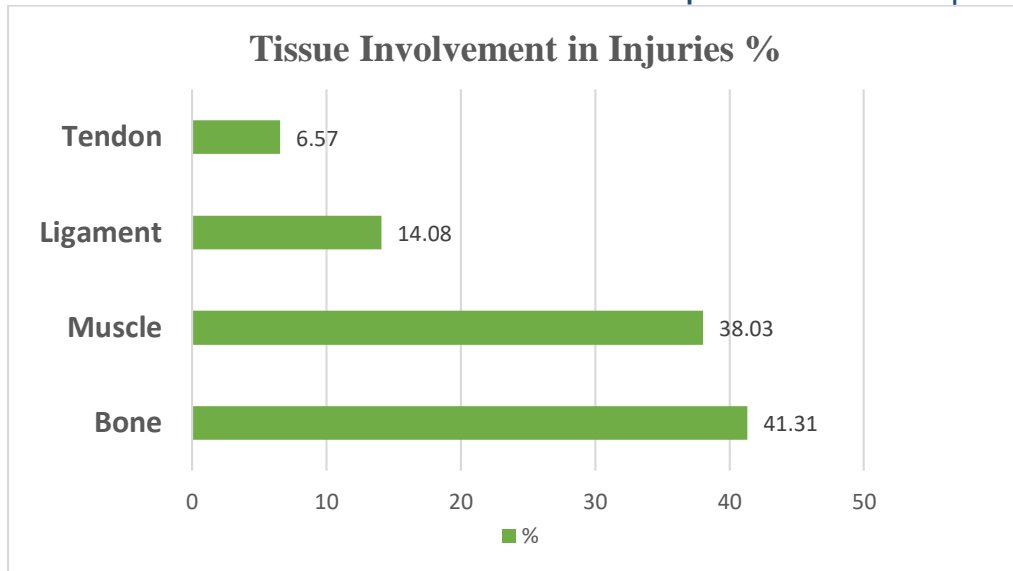
Injury Type	%
Acute	46.1%
Chronic	24.41%
Both (different sites)	29.58%



Tissue Involvement

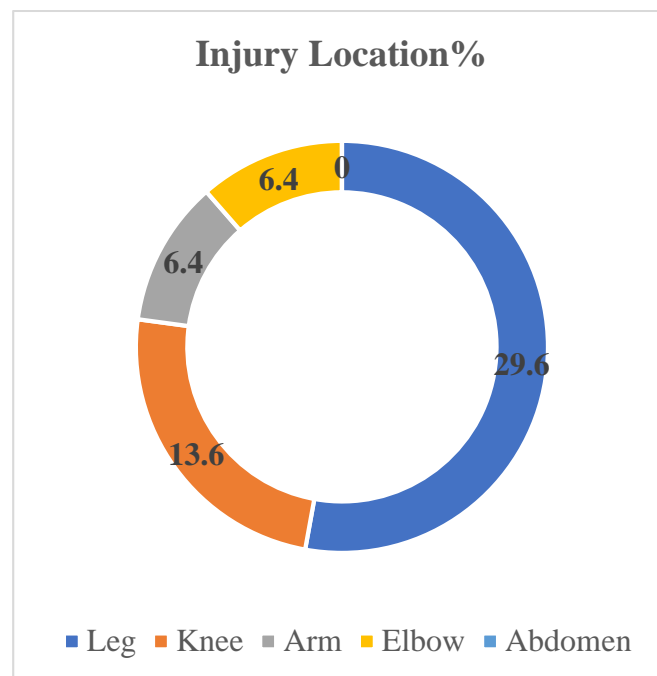
Figure 1: Tissue Involvement in Injuries (%)

- Bone: 41.31%
- Muscle: 38.03%
- Ligament: 14.08%
- Tendon: 6.57%



Injury Location:

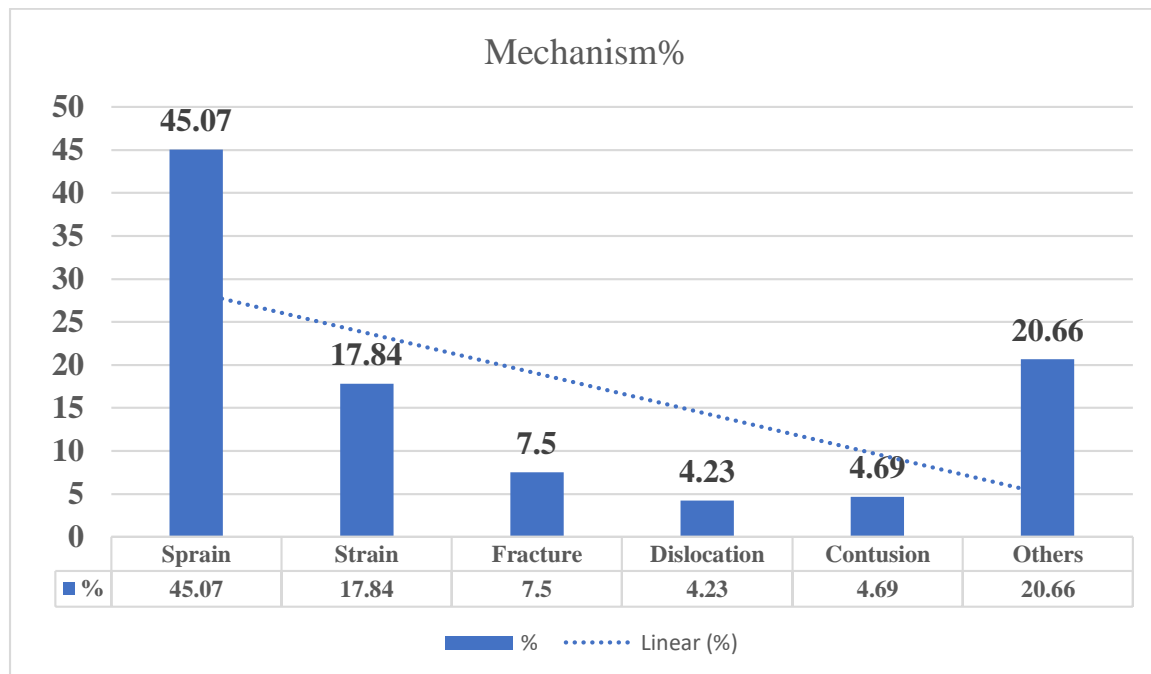
Leg	29.6 %
Knee	13.6 %
Arm	6.4 %
Elbow	6.4 %
Abdomen	4.8 %



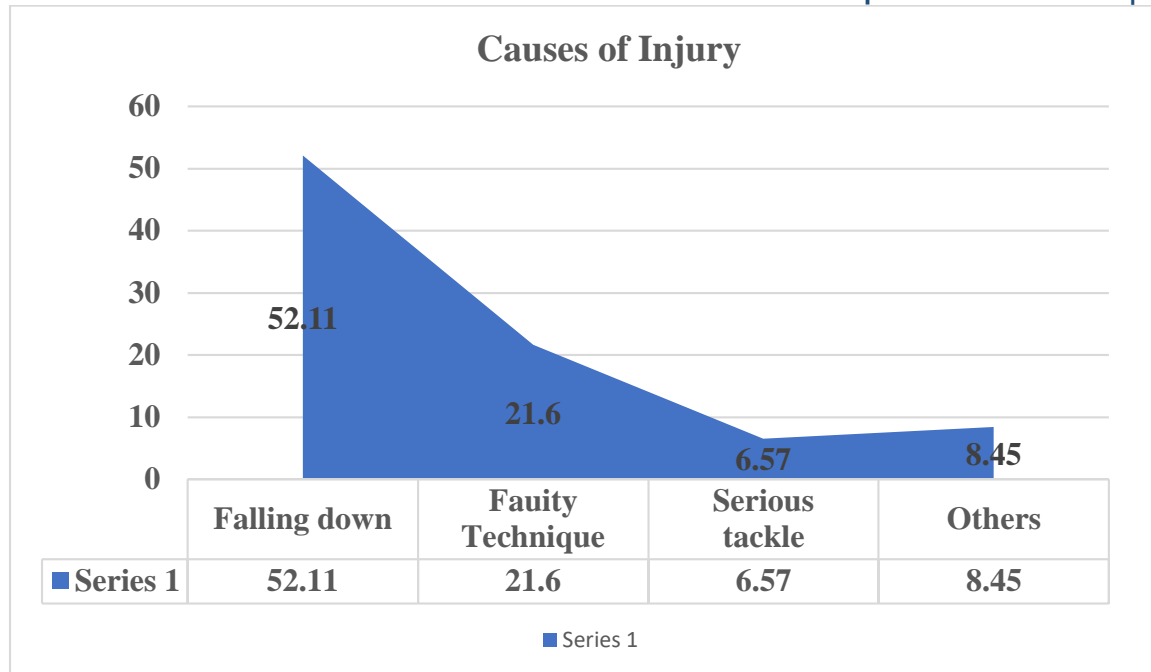
Injury Mechanism:

Table 3: Type of Injuries by Mechanism

Mechanism	%
Sprain	45.07%
Strain	17.84%
Fracture	7.5%
Dislocation	4.23%
Contusion	4.69%
Others	20.66%

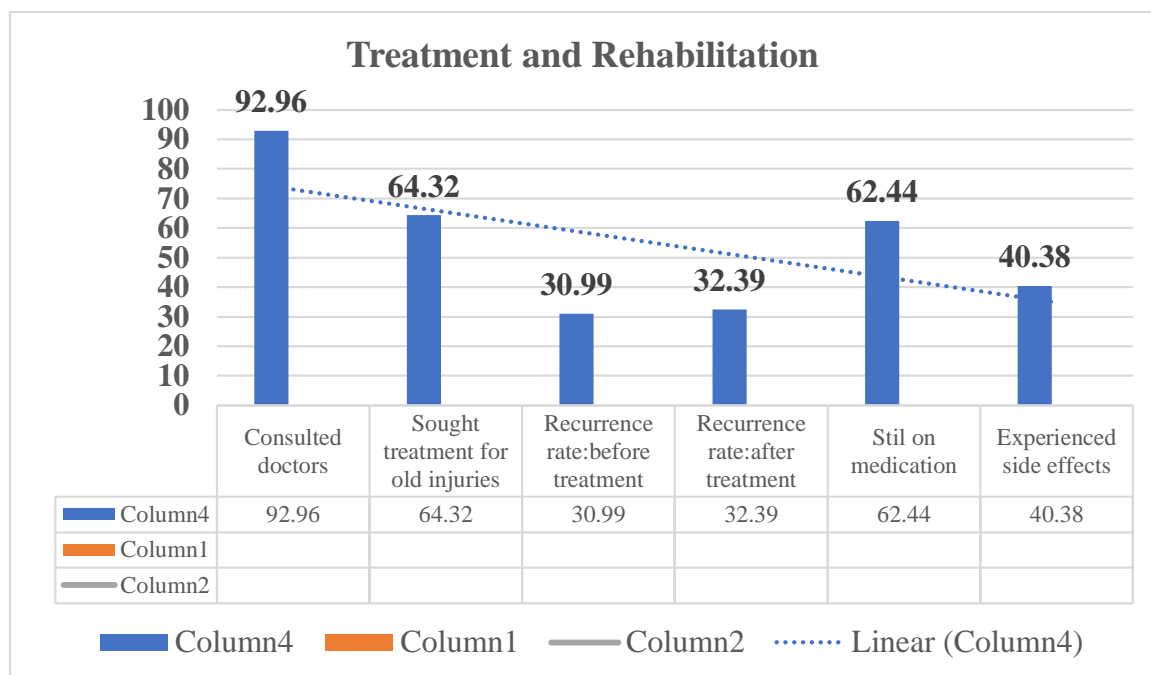
**Causes of Injury:**

Falling down	52.11 %
Faulty technique	21.6 %
Serious tackle	6.57 %
Others	8.45 %



Treatment and Rehabilitation:

Treatment and Rehabilitation	
consulted doctors	92.96 %
sought treatment for old injuries	64.32 %
Recurrence rate: before treatment	30.99 %
Recurrence rate: after treatment	32.39 %
still on medication	62.44 %
experienced side effects	40.38 %



Discussion:

Sports injuries are very common among Kho-Kho athletes, according to the study's findings, with the Under-14 division exhibiting the highest injury frequency. Numerous interconnected causes could be responsible for this trend. First off, kids in this age range are going through a crucial stage of musculoskeletal development; their growth plates are weak, their muscles and ligaments might not be strong enough to support their joints, and their bones are more cartilaginous. Second, a lack of institutionalized or regular training regimens makes many young players more likely to make technical mistakes when performing high-speed maneuvers like diving, sprinting, and abrupt direction changes. Furthermore, the risk of acute injuries is increased by poorly maintained fields and hazardous playing circumstances (such as hard soil, uneven surfaces, or a lack of protective equipment).

Acute injuries are more common than chronic ones, which is in line with research from other contact and semi-contact sports. Kho-Kho produces repetitive mechanical stress because of its distinctive mix of running, abrupt stops, quick turns, crouching positions, and regular physical contact. The high percentage of bone and muscle injuries (about 80%) highlights how physically demanding practice and competition are for athletes. Interestingly, the most common injuries were to the lower limbs, especially the leg and knee. This distribution is consistent with the biomechanics of Kho-Kho, where attacking and defending need powerful lower-body movements.

The prevalence of sprains and strains suggests deficiencies in joint stability, flexibility, and neuromuscular control. These injuries emphasize how crucial it is to include proprioceptive and balancing activities in training regimens. A lack of instruction in safe falling techniques, a well-established injury prevention strategy in other sports like judo and wrestling, may also be the cause of the finding that falls accounted for over half of the reported injuries. Therefore, implementing fall-prevention exercises may be crucial to lowering the frequency of injuries.

When compared to Kabaddi and wrestling, where upper-body injuries (shoulder dislocations, wrist fractures) are more common, Kho-Kho exhibits a unique injury profile dominated by lower-limb involvement, which reaffirms the need for customized injury-prevention strategies. The observed recurrence of injuries even after treatment reflects deficiencies in rehabilitation and premature return-to-play decisions. Athletes frequently resume competition before achieving full recovery, either due to lack of medical advice, pressure from competition schedules, or a lack of awareness, which can cause a cycle of re-injury.

Overall, the results highlight that although Kho-Kho promotes speed, agility, and endurance, athletes are at serious risk for injury due to its physical intensity, especially in the absence of regular conditioning programs and preventive measures.

Conclusion

Sports injuries are very common among Kho-Kho athletes, with the under-14 age group being the most susceptible, according to the current study. Younger athletes' vulnerability can be attributed to their musculoskeletal systems' immaturity, which includes developing bone growth plates, relatively weaker

ligaments, and undeveloped coordination abilities. These elements greatly raise the risk of injury during this growth stage, especially when combined with a lack of organized technical training and little exposure to structured strength-conditioning programs.

One noteworthy observation is the prevalence of acute injuries, with bone and muscle trauma accounting for the bulk of cases. This implies that the musculoskeletal system is under a great deal of stress due to the mechanical demands and physical intensity of Kho-Kho, which include quick acceleration, abrupt stops, low squatting positions, and frequent collisions. The knee and leg areas were found to be the most susceptible of all injury sites, which is consistent with the game's strong reliance on lower-limb mobility and the frequent changes between running, chasing, and dodging. These results are consistent with injury trends observed in comparable high-intensity field sports, where the majority of stress occurs in the lower extremities.

1. According to an examination of injury typology, sprains and strains accounted for a significant percentage of reported cases and were the most prevalent types of traumata. Falls, poor sprinting and dodging skills, abrupt direction changes, and insufficient flexibility or stability training are frequently the causes of these injuries. The prevalence of these soft tissue injuries emphasizes how critical it is to include exercises for proprioception, balance, and joint mobility in regular training regimens.

The significant recurrence rate of injuries even after treatment is one of the study's most alarming findings. This result points to several flaws:

2. Inadequate rehabilitation protocols: It's possible that athletes aren't adhering to physiotherapist-supervised structured recovery programs.
3. Inadequate medical support: Recovery prospects are limited by a lack of access to sports medicine specialists, particularly in rural and school-level contests.
4. Early return to play: Athletes frequently resume competitive play before fully recovering, which raises the possibility of re-injury.
5. In addition to impairing performance, this cycle of injury and re-injury increases the risk of long-term chronic musculoskeletal issues.

The injury profile is clearly sport-specific when contrasted with other contact sports like wrestling and kabaddi. According to the biomechanics of the game, Kho-Kho exhibits a lower-limb-dominating injury pattern, whereas Kabaddi and wrestling show higher rates of upper-body injuries from grappling, grips, and tackles. Instead of depending on broad injury prevention models, this disparity highlights the need to develop sport-specific preventive techniques. Lower limb strength and conditioning, joint stability, safe playing conditions, and biomechanical technique training are among Kho-Kho's top priorities.

This study concludes that although Kho-Kho is a great sport for improving speed, agility, and collaboration, it also carries a significant risk of injury, especially for young competitors. In order to protect athlete well-being, the results highlight the critical need for evidence-based prevention, organized rehabilitation procedures, and educational awareness campaigns. In addition to lowering the frequency of injuries, the successful application of such tactics will help Kho-Kho athletes develop more sustainably, perform better, and play for longer.

Recommendations

The following actions are advised in order to improve player safety and performance and lessen Kho-Kho's high injury rates:

A. Correction of Technique

- **The mechanics of motion:** To reduce joint stress, systematic training should emphasize safe stopping techniques, effective dodging strategies, explosive starts, and proper running posture.
- **Falling Drills:** To disperse impact energy and lower the chance of fractures and contusions, players should get training in controlled falling and rolling techniques akin to those found in martial arts.
- **Game-Specific Simulation:** To improve motor skills and lower injury rates from mistakes, include practice situations that replicate fast dodges and direction changes in a controlled environment.

B. Training for Strength and Flexibility

- **Lower-Limb Strengthening:** To enhance shock absorption during high-impact landings, concentrate on your quadriceps, hamstrings, calves, and hip stabilizers with resistance training and plyometrics.
- **Core Stability:** When making abrupt movements, a strong core helps with balance and lessens the compensatory strain on the lower limbs.
- **Flexibility and Mobility:** Regular yoga, dynamic mobility exercises, and stretching improve joint range of motion and lower the risk of injuries.
- **Proprioceptive training:** activities involving balance boards and single legs to enhance neuromuscular coordination and lessen sprains in the ankle and knee.

C. Playing Surfaces That Are Safe

- **Ground Quality:** Make sure the surfaces are level, non-slip, and devoid of any stones, holes, or imperfections. In contrast to hard soil, clay and artificial surfaces can lessen impact pressures.
- **Environmental Safety:** During training and competitions, it is important to provide enough lighting, boundary markers, and soft-landing areas for divers.

D. Programs for Structured Rehabilitation

- **Physiotherapy-Based Recovery:** Under supervision, injured athletes should go through a progressive rehabilitation process that includes rest, physiotherapy, functional drills, and clearance to resume play.
- **Injury Documentation:** Early identification of chronic problems can be facilitated by keeping track of medical records and recurrence tendencies.
- **Return-to-Play Protocols:** To avoid premature engagement prior to full functional recovery, scientific protocols must be created.

E. Education and Awareness of Injury

- **Workshops and Seminars:** Hold education workshops on common injury processes and prevention techniques for parents, coaches, and athletes.
- **Coach Education:** Certification courses that prioritize emergency first aid, injury prevention exercises, and safe training techniques.
- **Athlete Self-Care:** Participants should receive instruction on how to identify symptoms early, the value of warming up and cooling down, staying hydrated, and getting enough sleep to recuperate.

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Additional References on Kho-Kho Injuries and Related Factors:

Parmila (2019) *A study of common injuries of national-level Kho-Kho male players of Haryana*— This peer-reviewed article explores injury types (sprains, contusions, and abrasions), body parts most affected (wrist, knee, hamstring, and abrasion injuries), and underlying causes such as fatigue, poor warm-up, collision due to playing surface, malnutrition, and non-standardized fields. journalofsports.com.

Prevalence of Musculoskeletal Injuries in Kho-Kho Players (ResearchGate)

This study reports that the knee and ankle are frequently injured, with skin abrasions, deep cuts, sprains (~32.4%), muscle strains (~15.3%), and injuries from falling being common. Treatment was often basic first aid (RICE protocol), while only a minority needed advanced medical care; hospital admissions were rare (~7%). [ResearchGate](https://www.researchgate.net/publication/354848111).

“Injury & Medical Advice of Kho-Kho” (Olympic Dream India)

Highlights that 34% of injuries are accidental, 45% result from poor ground conditions, and 11% stem from technical errors or low fitness levels. Among higher-level players, ligament injuries (31%) and bone injuries (23%) were significant. Recovery patterns varied, with some players delaying medical consultations, while others followed formal rehabilitation protocols (odi.avyud.in).

Biomechanical Analysis of Running and Dodging Techniques in Kho-Kho (2025) Offers insights into biomechanical patterns during sprinting and dodging in Kho-Kho and discusses their implications for injury prevention and performance enhancements. These biomechanics are directly relevant to understanding injury mechanisms in the sport ijsrhss.com.

Anthropometry & Motor Fitness among Kho-Kho Players (Singh & Jaiswal) Assesses the relationship between body metrics (e.g., leg length, height) and motor fitness parameters such as agility, explosive power, flexibility, and muscular endurance in female Kho-Kho players. This indirectly informs injury risk by illustrating physical characteristics linked to performance and vulnerability (thescholedge.org).

Additional Contextual References (Fitness & Physical Profile)

Physical Fitness Comparison among Kabaddi, Kho-Kho & Wrestling Players (Singh & Hoshiyar, 2013) Compares agility, strength, speed, flexibility, and endurance across these indigenous sports, showing that Kho-Kho players have excellent agility and endurance—attributes that might influence both performance and injury risk in ISCA.

Body Composition & Somatotype of Kho-Kho Players (Manohar, 2015)

Compares the body composition of medallist and non-medallist players. Medallists had more muscle mass and were predominantly mesomorphic—highlighting how body structure may relate to both performance and injury resilience. ISCA.