

Original Article

# Suggestions to improve shortcoming in reporting and data collection procedure for studies of injuries in Kabaddi

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## ABSTRACT

**Objectives:** Kabaddi is a commonly played sport in Asia and now it is getting recognition worldwide. With the emergence of this sport, concern related to injuries associated with this sport is also increasing. For uniform reporting of injuries and illness in the epidemiological study (Kabaddi), it desired to have standard definitions on Kabaddi-related injuries.

**Materials and Methods:** After the initial review of various studies on other sports; the definitions and terms which can be valid for Kabaddi were selected and modified according to this sport. These definitions were then reviewed by experts, who have an abundance of experiences in the treatment of injuries related to this sport. After multiple meetings among the expert panel final definitions, terms, and methodology for injury surveillance studies were laid down.

**Results:** Only new and modified definitions were used in this paper, therefore, it is advised to use this paper in conjunction with STROBE-SIS. Injury rates were defined per 1000 raids or 1000 tackles. Various definitions like match time loss, general time loss, match injury incidence, training injury incidence, match injury prevalence, etc. were included in this paper.

**Conclusion:** These standard definitions will help inconsistent and better data collection in injury surveillance studies. This will also help in a better understanding of injury patterns.

**Keywords:** Kabaddi, Injury and illness, Reporting, Contact sport

## INTRODUCTION

Kabaddi is a very aggressive game and lots of injuries are reported to be associated with this sport. However, despite that, there are no standard definitions for data collection in injury surveillance studies for this sport. As this is an emerging sport, it is important to understand the type of injuries associated with this sport, so that prevention strategies can be formulated. However, uniform data collection is required throughout the world and the first step toward that is to lay down the definitions of various aspects for this sport, which can be used as a reference by the researchers. Till now many authors have done various studies on injuries that occurred while playing Kabaddi.<sup>[1-4]</sup> However, there is no uniformity in data collection as different methodologies were used in these studies. This study aims to set standard definitions and methodology for injury surveillance studies for Kabaddi.

## MATERIALS AND METHODS

This paper is based on STROBE-SIS.<sup>[5]</sup> The review of the literature pertaining to injury and illness was done by the

BA, AK, and MA, relevant data and definitions that can be used for the Kabaddi were searched.<sup>[6-16]</sup> Definitions that need to be modified to be according to Kabaddi were discussed with RA, AN, BA, and other members of the group. BA and AK discussed the various aspect of this sport with Kabaddi players and coaches. RA experience of the treatment of various international and national players was used to formulate the various definitions. After the RA and AN forms the initials definitions and terms, these were again circulated among the various members of the group. After all the members agreed on these definitions the final draft was formed. Only new and modified definitions were included in this article, therefore, this paper needs to be used in conjunction with STROBE-ISS.<sup>[5]</sup>

## RESULTS

### Role of player's in-game

In professional Kabaddi, team players have different roles. Raiders (attacking system) are the one who enters the

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opponent court for raiding and defenders (defense system) are those who challenge the raider during his/her raid. We suggested using these terms in defining the demographic profile of the injured sportsperson.

### **Professional status of players**

It is important to mention the professional status of players: Professional, semi-professional, and amateurs. Professional players are those who take Kabaddi as their full-time occupation. Semi-professional players are those who do additional work to augment their income from Kabaddi, whereas, amateurs are those who are working in another field other than Kabaddi but still can earn money from this sport like prize money in various regional competitions. For any injury surveillance study, it is important to define the cohort. Kabaddi squad includes all players even those also who were original not in the team but replace the players during the match as a substitute. For complete tournament analysis injury studies like world cup or premier league, the cohort will include the reserve member of the team also.

### **Injury definitions**

#### ***“Match time loss” injury***

An injury or medical illness that makes the player unfit or unavailable for a match or any injury that happened during the match that forces the player to leave the field and makes that player unavailable for the rest of the match. In case of injury surveillance at club or district level, match time loss definition if used then it is important to mention that it's a major match.

#### ***“General time loss” injury***

Any injury or illness that forces a player to remain unavailable for match or training disregarding whether there is any match or training planned.

#### ***“Medical attention” injury***

Any injury that required doctor or physiotherapist attention and can affect the training or playing of a Kabaddi player.

#### ***“Player reported” injury***

These usually happened at amateur levels where injury is reported by the players himself or by the coach on the player's behalf without being examined by the team doctor.

### **Mode of onset**

#### ***Acute injury (<3 weeks)***

Any acute injury or illness that makes Kabaddi player unavailable for match or training or force player to leave match or training in between (ankle injury, shoulder dislocation, knee ligament injuries, and muscle injury).

#### ***Chronic injury (>3 weeks)***

Any acute injury which is not getting resolved with medical or non-operative (physiotherapy) treatment has now presented

for more than weeks or months is labeled as chronic injury (ligament injury, and recurrent instability episodes.).

#### ***Insidious onset injury***

Injury which is minor initially, however, slowly getting worse over a period of time and now required medical attention (meniscal tear, backache, etc.).

#### ***Medical illness***

Gastrointestinal infection, fever, upper respiratory tract infection, etc.

### **Definition of injury recovery (return to sports) and reoccurrence**

#### ***Recovery***

Kabaddi player will be considered recovered from injury once the player has attained full unrestricted activity and is fit enough to participate at the same professional level match.

#### ***Reoccurrence***

Any same injury that happened in same season or surveillance year after it has been declared recovered. Depending upon time to recovery from Kabaddi injuries, time loss is further classified as match time-loss injury and general time-loss injuries.

### **Injury incidence measures**

#### ***Injury incidence***

This analyses the number of injuries (new or recurrent) that happened over a given time period.

#### ***Match injury incidence***

Only includes those injuries that happened in a major match. These are calculated based on time and raids. Raiders in Kabaddi go in opponent court where he was tackled by the opposite team. In a match single players can go for multiple raids, considering the number of raids as denominator, raider and defender injuries were classified separately.

Injuries per number of player hours or day = (Number of new + recurrent injuries) ÷ number of players hours or days

Raider match injury incidence = number of raiders injuries ÷ number of raids

Defender match injury incidence = number of defender injuries ÷ number of tackles

Match injuries from both raiding and defending: injuries per 1000 player days

Raiding injuries: injuries per 1000 raids

Defending injuries: injuries per 1000 tackles

#### ***Training injury incidence***

This needs to be measured separately from the match injury incidence, although it is difficult to measure the exposure as multiple phases such as game practice, general conditioning, and strength training are involved in training seasons. It is

recommended to use the same units (injuries per 1000 raids in training sessions).

### Yearly or seasonal injury incidence

Yearly or seasonal injury incidence is defined as the number of injuries occurring per squad in a season or year, this includes match injuries, training injuries, and also gradual or chronic injuries. Usually, Kabaddi season is between July to October, each squad has around 18–20 players which include rider, defender, and all-rounders. Nearly 20–25 matches were played by one squad in one season.

### Injury prevalence measure

Injury prevalence is defined as the number of team players unavailable for selection due to injury or illness in a specific time frame divided by total number of team members. Match injury prevalence is expressed as percentage:  $\text{players missed number of games in given season} \div (\text{Number of games played in a season multiply by total number of players participated in given season})$ . For example, if Match injury prevalence is 7%, it means 7% of players are unavailable for matches played due to illness or injury. Training injury prevalence:  $\text{number of players unavailable for training due to injury or illness in given time frame} \div (\text{number of players in squad multiple with number of training sessions})$ .

### Player competition availability

Player competition availability is calculated by keeping total number of playing opportunities (total number of games played multiply by of number of squad members) as denominator and the availability of players (average number of squad members available for match multiple by total number) as numerator.

### Study designs

It is advised to do prospective studies with “opt-in” consent rather than retrospective study and “opt-out” consent.

### Individual player data management

In injury surveillance studies, it is important to have individual data like age, sex, body mass index, type of player (raider, defender, and all-rounder), mode of injury (contact or non-contact), and mechanism of injury (scissor grip, directly hit, body tackle, and ankle holding.).

### Data collection

For uniform data collection, it is important to have good data collection by a single designated person possibly the head of the department of medical team looking after the team squad. Data should be collected weekly, this will help in uniform data collection, and chances of missing injury can also be reduced by this.

### Good quality injury surveillance study

Kabaddi is a relatively new sport and it is in a phase of evolution, therefore, it is important to have good injury

surveillance studies for this sport. For the formulation of injury prevention programs for Kabaddi, it is important to understand the magnitude of the problem and to understand that good injury surveillance study is required. We request the Kabaddi federation to provide sufficient funds for prospective studies for Kabaddi injury surveillance.

## DISCUSSION

This article is based on previous injury/illness surveillance studies conducted on other sports. The aim of this article is to bring uniformity in data collection in injury surveillance study on Kabaddi by using standard definitions. Kabaddi is an Indian origin sport-inspired by Mahabharata and with its growing popularity all over the world, it becomes important to have standard definitions. We understand this is the first scientific statement over the Kabaddi injuries definitions and there is the scope of further addition and improvement of these definitions. This study will help the researcher to better understand the injuries pattern, mechanism, and cause in Kabaddi players which further will help in forming various injury prevention programs. We also suggest improvement in playing conditions and protective equipment used at district levels and club levels also.

In Kabaddi, shoulder dislocation, ankle, and knee ligament injuries are frequently encountered,<sup>[17,18]</sup> it is important to document these kinds of injuries so that the root cause of these injuries can be understood and preventive measures can be taken to prevent these injuries.

Concussions injuries these days are taken very seriously due to the life-threatening impact of these injuries, in Kabaddi surprisingly concussion is one of the most common injury.<sup>[19,20]</sup> A concussion injury can have immediate, short-term, and long-term effects. We suggest that the medical team should maintain data records pertaining to injury on the head-and-neck region irrespective of whether they fall in the category of concussions or not. Any injury on the head and neck region should be investigated by the medical team even if the player claims to have no symptoms.

With the additions of premier leagues, the number of modifications were done in this sport and it is expected to have many more modifications in the future also, which may require the updating of various definitions.

## CONCLUSION

These standard definitions will help in the consistent and better data collection in injury surveillance studies. This will also help in a better understanding of injury patterns.

### Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

**Conflicts of interest**

Prof. Ravi Gupta is in editorial board.

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