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## Analysis of time and injury incidences in I-league Football Championship

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#### Abstract

The purpose of this study was to analyze the time that injuries were occurred in course of football game. There were one hundred four matches of the two I- League competitions were recorded by using computerized video analysis program. Chi-square methods were used for the data analysis and the level of significance was set in  $p<0.05$ . The result of the study revealed that no significant difference of injury incidences between first half analysis compared to the second half ( $p<0.05$ ), while in the second half injury percentage was greater than the first half. The every quarter (15min) of game analysis revealed that most incidences of injury were occurred in fifth quarter 61-75min, ( $p<0.05$ ) of matches.

**Keywords:** Football, injury incidence, video-analysis

#### 1. Introduction

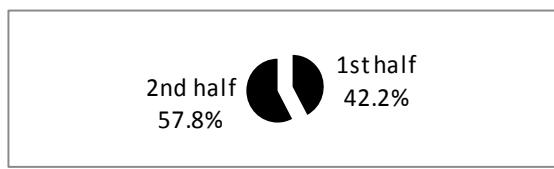
Injuries of players in the football sport are common aspect of the sport. AIFF (All India Football Federation) has expressed its concern over the physical and mental demands being placed on modern professional footballers and the translation of the physical and mental demands into injury syndromes. This research project, specifically aimed to analyze the timing of injury incidences in I-League (Indian National Football League) matches. This study transferred to coaches and footballers are very important for design of the training regimens strategically, such that they can win matches by the choice of appropriate tactics and their application in the game. It is a terrible setback to concede an injury from the kickoff to the extreme minute of game play for a team. The injury lifts the confidence of a team as it gets to dictate the pace of the game. The Indian National Football Association has to organize I-league to determine national champion club as well as the best players who then go on to represent the country. The study quantify the percentage in terms which quarters and halves of the game injuries happened over total time and determine a critical phase of the game with the highest incidence of injuries were occurred.

#### 2. Methods

One hundred four matches of the two I-League competitions (2013-14 and 2014-15) were analyzed. The videotaped of football matches were recorded for analysis and software program was used for the purpose of the study. The study was based on the researcher's personal observation. The analysis variables were the frequency percentage of injury per 45 minutes (two halves: kick off- 45+ min and 45-90+ min) and the frequency percentage of injury per 15 minutes (six quarter: kick off-15min, 16-30min, 31-45+ min, 45-60min, 61-75min, 76-90+ min) duration. To find out the result chi-square method was used and the level of significance was set at  $p<0.05$ .

#### 3. Results

Figure-1 showed the frequency of first half injury percentage compared to the second half.



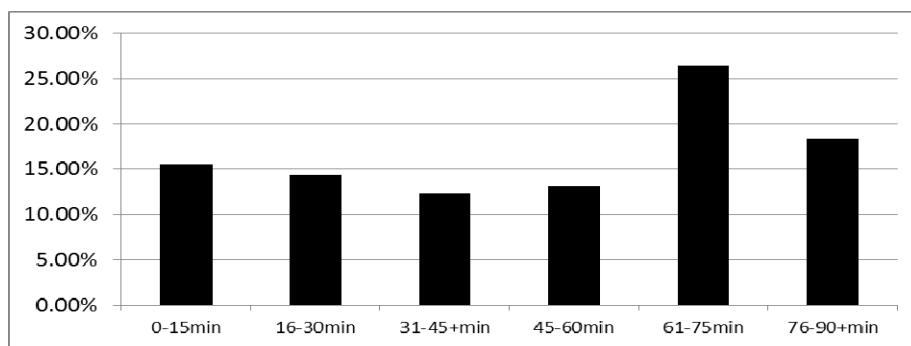
**Fig 1:** First half injury percentage compared to the second half  
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Figure-1 showed that frequency percentage of injury was greater in second half compared to first half as per 45+ minutes time basis. In the statistical analysis no significant differences was found of injury incidences between the two

halves (42.2% vs. 57.8%,  $\chi^2=0.18$ ,  $p>0.05$ ).

Figure-2 demonstrated, the 90+ minute duration divided into six quarter and the relationship between time and injury incidents per 15 minutes basis.



**Fig 2:** Timing of injury in percentage over 90+ min duration

Figure-2 showed per 15-min analysis of the injury incidences that the majority were made in the fifth quarter (61-75min) of a match. The statistical analysis of injuries showed that there were significant differences between the fifth quarter and second (26.4% vs. 12.3%,  $\chi^2 = 5.91$ ,  $p<0.05$ ), third (26.4% vs. 14.3%,  $\chi^2=4.23$ ,  $p<0.05$ ) and fourth (26.4%vs. 13.1%,  $\chi^2=5.04$ ,  $p<0.05$ ). But no statistical differences were found between fifth quarter and first (26.4% vs. 15.6%,  $\chi^2 = 3.12$ ,  $p>0.05$ ) and last quarter (26.4%vs. 18.3 %,  $\chi^2=2.04$ ,  $p>0.05$ ) of a match.

#### 4. Discussion

The findings of this study showed that the highest percentages of injury incidents were occurred between the 61st to 75th minute of a match. In the study of Armata *et al*, (2007), identified a number of factors that could explain the increased injury rate in the second half due to fatigue and physical deterioration as increasing the tempo of match, tactical roles of the players, dehydration and hyperthermia diminished cognitive function which all combine to compromise decision making as well as loss of concentration as a result prone to injury. According to Alex Ferguson, the first quarter and last two quarters of a match was very critical moments for taking risks in different terms. On the basis of the result, the investigator opined that a team therefore should be exposed to extreme pressure of training so that physical and mental conditions of footballers' technique do not deteriorate in actual matches. This means that the approach to training should be the mirror of the actual competitive play. The coaches tend to concentrate on perfecting tactics as well as recuperating the team in readiness for the serial of matches. One of the critical periods of conditioning for players is the preseason and the transitional season. This is a time for laying the fitness foundation of each individual player. Teams that have weak performances in the second half of matches thereby conceding injury could have issues with inadequate programme planning for the long term competitive season.

#### 5. Conclusion

1. The frequency of injury percentage was greater in second half compared to first half.
2. The majority injury incidence was made in the fifth quarter of a match.
3. The injury percentage in fifth quarter was significantly greater than second, third and fourth quarter of a match.
4. The injury percentage in fifth quarter in comparison to first and last quarter was found not significant.

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