IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.471 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 15, Issue 2, February 2026

DOI: 10.17148/IJARCCE.2026.15245

PREVALENCE AND TIME-SITUATION ANALYSIS OF INJURIES IN FOOTBALL

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Abstract: Football is one of the most popular sports worldwide and involves high-intensity physical activity that exposes players to a considerable risk of injury. The present study aimed to examine the prevalence and time situation of injuries among elite football players. A descriptive retrospective research design was adopted for the study. A total of 1000 elite football players aged between 14 and 30 years were selected using purposive sampling from clubs, universities, and state teams affiliated with the All India Football Federation. Data were collected using a self-developed football injury questionnaire modified from Singh (2012). The collected data were analyzed using descriptive statistics and percentages through SPSS version 16. The results revealed that the highest percentage of injuries occurred during training/practice sessions (38.12%), followed by the second half of matches (30.88%), the first half of matches (25.33%), warm-up/conditioning (4.55%), and warm-down/cooling-down phases (1.33%). The findings highlight the importance of proper training management, injury prevention strategies, and structured warm-up and recovery protocols to reduce injury risks among football players.

Keywords: Football injuries, Elite football players, Injury prevalence, Training injuries, Match injuries, Sports injury prevention

I. INTRODUCTION

Football is a high-intensity sport that demands speed, strength, agility, endurance, and technical skills from players. Due to the dynamic nature of the game, football players are frequently exposed to various types of injuries during training and competitive matches. These injuries can significantly affect the performance, career longevity, and overall health of athletes.

Inadequate warm-up and stretching exercises have been identified as major contributing factors to sports injuries. When proper warm-up and conditioning are not performed, the risk of injury increases and recovery time may also be prolonged (Price et al., 2004). Injuries may occur at all levels of football, from junior to senior competitions, indicating the need for effective injury prevention strategies.

Sports play a crucial role in the overall development of individuals by contributing to physical fitness, mental well-being, and social integration (Amol, 2022). In addition, sports contribute to national pride and enhance the international image of a country. The importance of sports in maintaining the health of both body and mind is widely recognized (Price et al., 2004).

India is a diverse country characterized by different cultures, castes, and communities. Sports serve as an important medium for promoting unity and social integration by bringing individuals together under the spirit of teamwork and mutual respect. Therefore, strengthening sports culture can play an important role in social cohesion.

Football places considerable physical stress on players due to intermittent high-intensity movements such as sprinting, jumping, tackling, and sudden changes in direction. These movements increase the risk of musculoskeletal injuries. Football activity typically involves intermittent bursts of high-intensity effort followed by short recovery periods (Albright, McAuley & Martin, 1985).

Research indicates that injury risk varies depending on factors such as age, training intensity, and exposure time. Studies have shown that the risk of injury is often higher during training sessions than during actual matches due to the longer duration of exposure and repetitive physical load (Albright et al., 1985).

Previous research by Singh (2013) reported that among football players, 35.80% experienced muscle injuries, 30.53% ligament injuries, 8.84% tendon injuries, 9.29% pain-related injuries, and 3.53% sprains, while 3.53% reported other types of injuries. These findings indicate that muscle and ligament injuries are the most prevalent among football players.

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Therefore, understanding the prevalence and timing of injuries is important for developing effective injury prevention strategies and improving training protocols for football players.

II. METHODS

Research Design

The present study adopted a **descriptive retrospective research design** to examine the prevalence and time-situation of injuries among football players. Retrospective studies commonly use questionnaires to collect information about injuries that occurred during a specified period in the past.

Pilot Study

A pilot study was conducted prior to the main research to test the feasibility and logistical aspects of the study, particularly regarding injury reporting and player activity documentation. The pilot study helped refine the questionnaire and improve data collection procedures.

Participants

The study included **1000 elite football players aged between 14 and 30 years**. Participants were selected from various football clubs, universities, and state teams affiliated with the **All India Football Federation (AIFF)**.
The players were categorized into four age groups:

- 14–17 years
- 18–21 years
- 22–25 years
- 26–30 years

Sampling Method

A **purposive sampling technique** was used to select the participants. This method allowed the researcher to include elite football players who were actively participating in competitive football.

Data Collection Tools

The study relied on primary data collected through a **self-developed football injury questionnaire**, which was modified from the questionnaire developed by Singh (2012).

The questionnaire consisted of two sections:

1. Demographic Information

This section collected information related to age, height, weight, smoking habits, and other lifestyle characteristics.

2. Football Injury Questionnaire

This section included questions related to the types, causes, and time situations of injuries experienced by the football players.

Procedure for Data Collection

Permission was obtained from the relevant authorities of football clubs, universities, and organizations affiliated with the All India Football Federation. After obtaining approval, questionnaires along with consent forms were distributed to the participants.
The players completed the questionnaires independently without external assistance. Data were collected either individually or during tournaments such as inter-varsity and state-level competitions.

Data Analysis

The collected data were checked for completeness and accuracy before being coded and entered into **Statistical Package for Social Sciences (SPSS) version 16**. Descriptive statistics, including percentages and regression analysis, were used to analyze the data.

III. RESULTS AND DISCUSSION

The results of the study are presented through tables and figures with appropriate descriptions. The findings are discussed in detail by comparing them with previous studies and relevant literature in the field of sports injury epidemiology.

IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

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Table -1
Depicteds the injuries/Injury reported by elite football players during time situation in percentage (%)

Sr. No.	Time Situation	Percentage of injuries (%)
1)	First halves (0-45 minutes)	25.33%
2)	Second halves (46-90 minutes)	30.88%
3)	Training/Practice	38.12%
4)	Warm up/Conditioning	04.55%
5)	Warm Down/ Cooling dawn	01.33%

Table 1 depicts the injuries reported by elite football players during different time situations in percentage (%). The results show that 25.33% of football players reported injuries during the first half of the match (0–45 minutes), whereas 30.88% of injuries were reported during the second half of the match (46–90 minutes) by elite football players. Furthermore, 38.12% of injuries were reported during the training or practice period. Moreover, 4.55% of injuries were reported during warm-up or conditioning, while 1.33% of injuries occurred during the warm-down or cooling-down period.

The findings of the study indicate that most injuries occurred during match-playing periods compared to warm-up and cooling-down periods, while a considerable number of injuries also occurred during training or practice sessions.

Figure-1
The figure illustrates the injuries reported by elite football players during time situation in percentage (%).

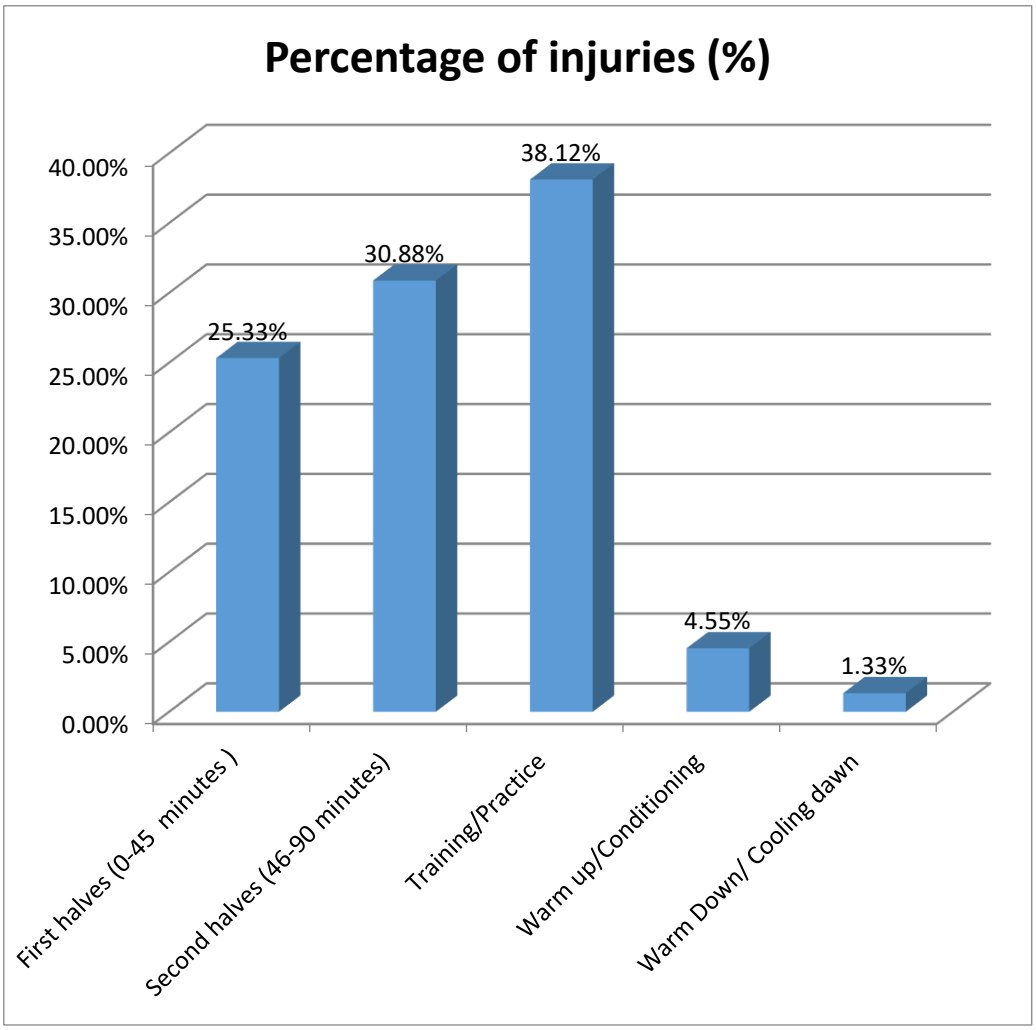

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Table -2
Depicteds the injuries/Injury reported by the Aged group (14-17 years) football players during time situation in percentage (%)

Sr. No.	Time Situation	Percentage of injuries (%)
1)	First halves (0-45 minutes)	27.30%
2)	Second halves (46-90 minutes)	29.80%
3)	Training/Practice	36.33%
4)	Warm up/Conditioning	04.55%
5)	Warm Down/ Cooling dawn	02.30%

Table 2 depicts the injuries reported by elite football players of the **14–17 years age group** during different time situations in percentage (%). The results show that **27.30% of football players in the 14–17 years age group reported injuries during the first half of the match (0–45 minutes)**, whereas **29.80% of injuries were reported during the second half of the match (46–90 minutes)**. Furthermore, **36.33% of injuries were reported during the training or practice period** by football players of the 14–17 years age group. Moreover, **4.55% of injuries were reported during warm-up or conditioning**, while **2.30% of injuries occurred during the warm-down or cooling-down period**.

The findings of the study indicate that **most injuries among football players in the 14–17 years age group occurred during match-playing periods compared to warm-up and cooling-down periods**, although a considerable proportion of injuries were also reported during training or practice sessions.

Figure-2
The figure illustrates the injuries reported by the Aged group (14-17 years) football players during time situation in percentage (%).

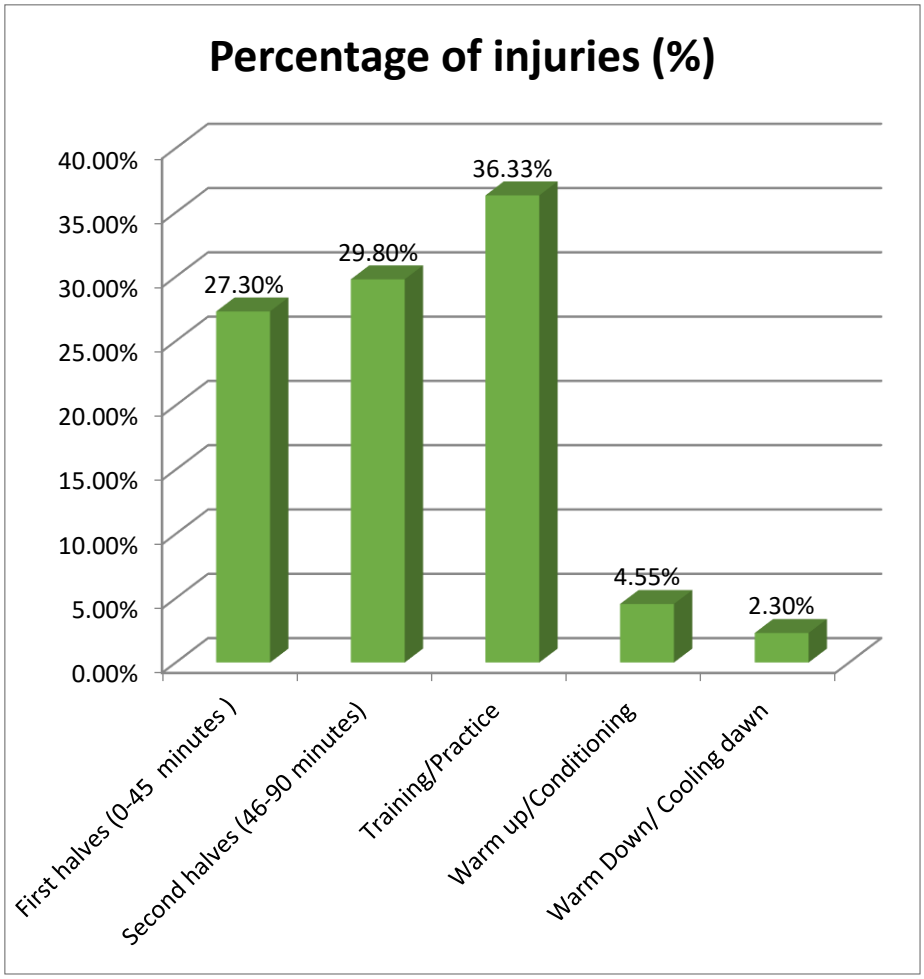

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Table -3
Depicteds the injuries/Injury reported by the Aged group (18-21 years) football players during time situation in percentage (%)

Sr. No.	Time Situation	Percentage of injuries (%)
1)	First halves (0-45 minutes)	28.25%
2)	Second halves (46-90 minutes)	32.56%
3)	Training/Practice	34.30%
4)	Warm up/Conditioning	04.55%
5)	Warm Down/ Cooling dawn	02.30%

Table 3 depicts the injuries reported by elite football players of the 18–21 years age group during different time situations in percentage (%). The results show that 28.25% of football players in the 18–21 years age group reported injuries during the first half of the match (0–45 minutes), whereas 32.56% of injuries were reported during the second half of the match (46–90 minutes). Furthermore, 34.30% of injuries were reported during the training or practice period by football players of the 18–21 years age group. Moreover, 4.55% of injuries were reported during warm-up or conditioning, while 2.30% of injuries occurred during the warm-down or cooling-down period.

The findings of the study indicate that most injuries among football players in the 18–21 years age group occurred during match-playing periods compared to warm-up and cooling-down periods, although a notable proportion of injuries were also reported during training or practice sessions.

Figure-3
The figure illustrates the injuries reported by the Aged group (18-21 years) football players during time situation in percentage (%).

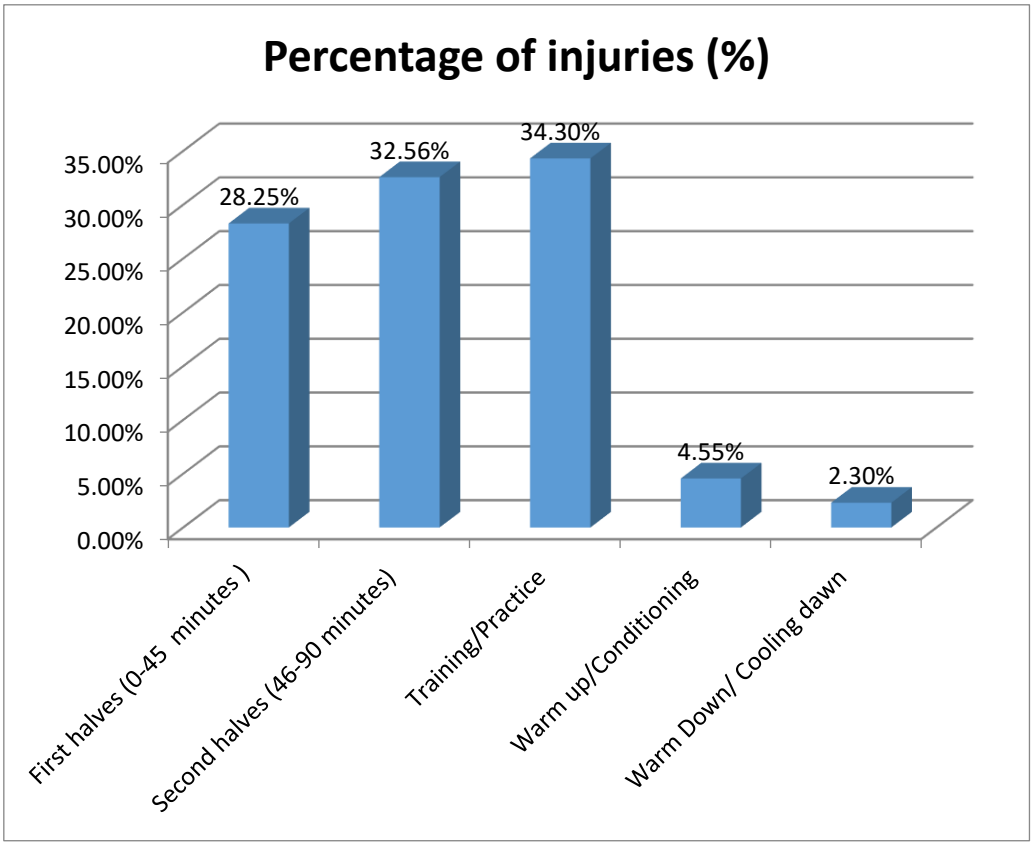

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Table -4
Depicteds the injuries/Injury reported by the Aged group (22-25 years) football players during time situation in percentage (%)

Sr. No.	Time Situation	Percentage of injuries (%)
1)	First halves (0-45 minutes)	30.20%
2)	Second halves (46-90 minutes)	32.56%
3)	Training/Practice	31.50%
4)	Warm up/Conditioning	05.50%
5)	Warm Down/ Cooling dawn	02.30%

Table 4 depicts the injuries reported by elite football players of the 22–25 years age group during different time situations in percentage (%). The results show that 30.20% of football players in the 22–25 years age group reported injuries during the first half of the match (0–45 minutes), whereas 32.56% of injuries were reported during the second half of the match (46–90 minutes). Furthermore, 31.50% of injuries were reported during the training or practice period by football players of the 22–25 years age group. Moreover, 5.50% of injuries were reported during warm-up or conditioning, while 2.30% of injuries occurred during the warm-down or cooling-down period.

The findings of the study indicate that most injuries among football players in the 22–25 years age group occurred during match-playing periods compared to training/practice, warm-up, and cooling-down periods.

Figure-4
The figure illustrates the injuries reported by the Aged group (22-25 years) football players during time situation in percentage (%).

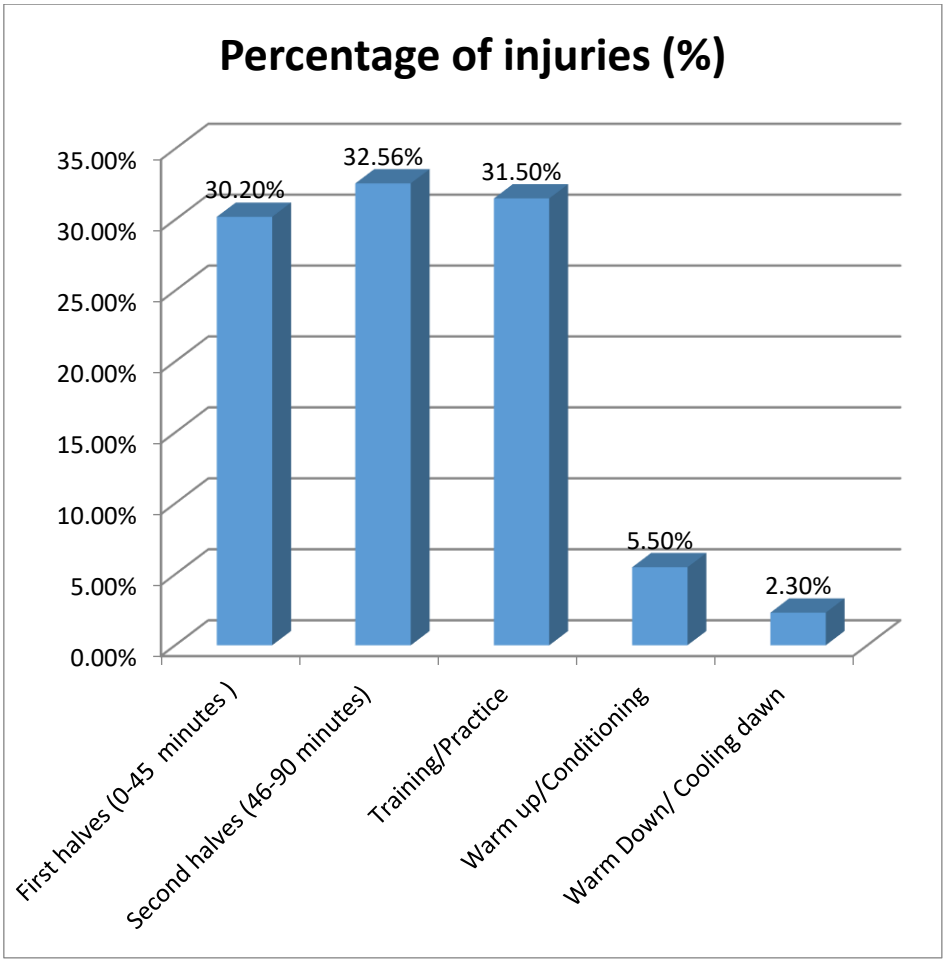

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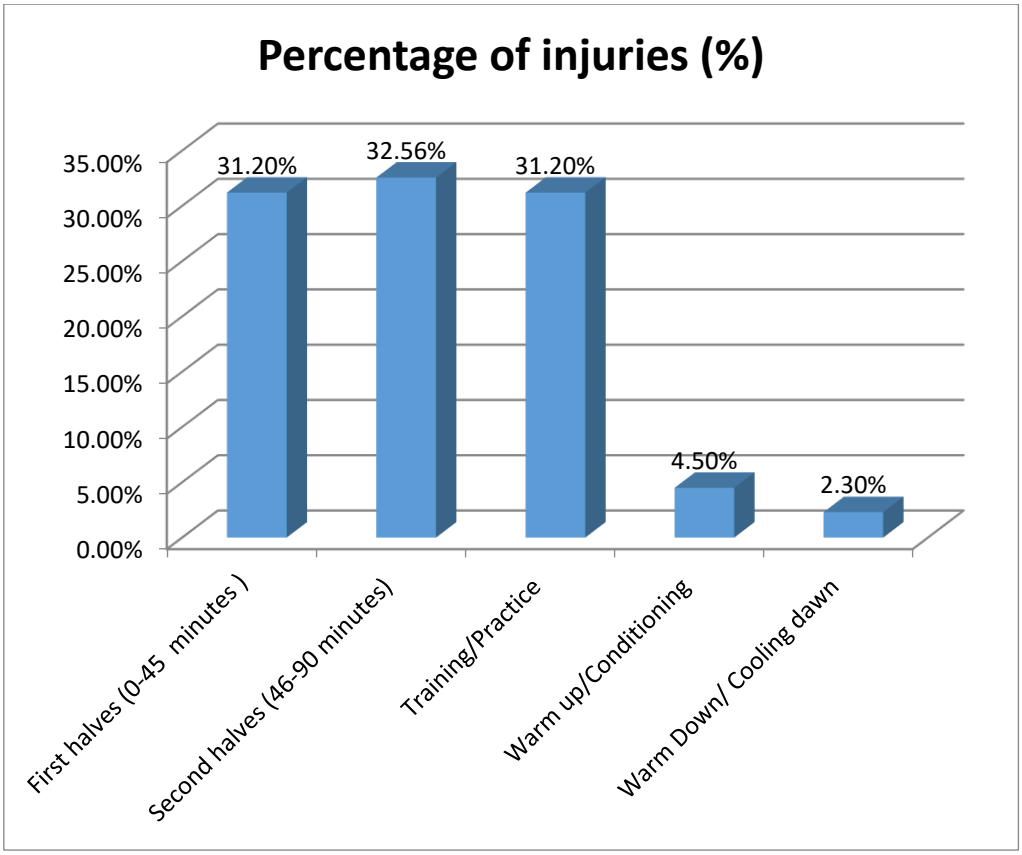
Table -5
Depicted the injuries/Injury reported by the Aged group (26-30 years) football players during time situation in percentage (%)

Sr. No.	Time Situation	Percentage of injuries (%)
1)	First halves (0-45 minutes)	31.20%
2)	Second halves (46-90 minutes)	32.56%
3)	Training/Practice	31.20%
4)	Warm up/Conditioning	04.50%
5)	Warm Down/ Cooling dawn	02.30%

Table 5 depicts the injuries reported by elite football players of the 26–30 years age group during different time situations in percentage (%). The results show that 31.20% of football players in the 26–30 years age group reported injuries during the first half of the match (0–45 minutes), whereas 32.56% of injuries were reported during the second half of the match (46–90 minutes). Furthermore, 31.20% of injuries were reported during the training or practice period by football players of the 26–30 years age group. Moreover, 4.50% of injuries were reported during warm-up or conditioning, while 2.30% of injuries occurred during the warm-down or cooling-down period.

The findings of the study indicate that most injuries among football players in the 26–30 years age group occurred during match-playing periods compared to training/practice, warm-up, and cooling-down periods.

Figure-5
The figure illustrates the injuries reported by the Aged group (26-30 years) football players during time situation in percentage (%).



Discussion

The findings of the present study indicate that injuries among elite football players occur most frequently during **training and practice sessions (38.12%)**, followed by the **second half of matches (30.88%)** and the **first half of matches**

DOI: 10.17148/IJARCCE.2026.15245

(25.33%). A comparatively smaller percentage of injuries occurred during **warm-up (4.55%)** and **cool-down (1.33%)** periods.

The higher incidence of injuries during training sessions may be attributed to prolonged exposure to physical activity, repetitive movements, and high training loads. Players often engage in intense drills, conditioning exercises, and tactical practices that increase the risk of muscle fatigue and musculoskeletal stress. Similar observations have been reported by Albright, McAuley, and Martin (1985), who noted that injury risk increases with greater exposure time during training activities.

The study also indicates that injuries during the **second half of matches** are higher than in the first half. This may be due to fatigue, reduced concentration, and decreased neuromuscular coordination as the match progresses. Fatigue can impair decision-making and reaction time, thereby increasing the likelihood of injury during competitive play.

Although a relatively small percentage of injuries were reported during warm-up and cool-down periods, these phases are critical for injury prevention. Proper warm-up routines increase muscle temperature, enhance flexibility, and prepare the body for intense physical activity. Similarly, cooling-down exercises help restore physiological balance and reduce muscle stiffness.

Previous research by Singh (2013) also reported that muscle and ligament injuries are the most common injuries among football players, which is consistent with the physically demanding nature of football.

Overall, the findings highlight the need for structured training programs, proper warm-up and recovery protocols, and scientifically designed conditioning programs to minimize the risk of injuries among football players.

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