Zahedan Journal of Research in Medical Sciences
Volume 27 · Issue 2 · e159256

OPEN PEER REVIEW

Prevalence of Upper and Lower Extremity Injuries in Elite Iranian Handball Players: A Cross-Sectional Study

Mohammad Seyedahmadi, Fahimeh Keavanloo, Aryan Omidi, Nafise Bagheri

SUBMITTED	REVISED	ACCEPTED	DOI
30 Dec 2024	21 Jan 2025	2 Feb 2025	10.5812/zjrms-159256

About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

More about open peer review: brieflands.com/knowledgebase/opr

Contents

1 **Original submission** Referee 1, Associate Editor 2
2 **Revision 1** Associate Editor 4
Authors' reply to reviewers 5
Reviewer and editor comments 8
3 **Revision 2** Associate Editor 9
Authors' reply to reviewers 10
Reviewer and editor comments 14

1 Original submission

2 comments · 7 Jan 2025 – 7 Jan 2025

Referee 1 Reviewer

MAJOR REVISION 7 Jan 2025

The study provides valuable insights into the prevalence and patterns of upper and lower extremity injuries in elite Iranian handball players. However, it has some limitations, particularly regarding the design and the limited depth of analysis.
The study effectively compared injury patterns between male and female athletes, which is crucial for understanding gender-specific risk factors. However, it has many weaknesses.
The analysis primarily focuses on injury prevalence and type. A more comprehensive assessment of injury severity (e.g., time-loss, return-to-play time) would provide valuable information for injury management and prevention.
Recall Bias: Since the study is cross-sectional, relying on athlete or coach recall for injury information may introduce bias.
Selection Bias: The study population is limited to elite Iranian handball players, potentially limiting the generalizability of findings to other levels of play or populations.
Ethical consideration
This study was approved by the Ethics Committee of the Institute of Physical Education and Sport Sciences under the code IR.SSRI.REC-xxxx-xxx.
??????????????
The research was descriptive-cross-sectional
and conducted as a retrospective epidemiological study....
Which years?

Statistical Considerations:
Chi-Square Test: The choice of the chi-square test is appropriate for analyzing categorical variables like gender, injury type (joint, muscle, bone), and injury location (upper, lower).
Independent Samples t-test: The use of independent samples t-tests to compare mean age, height, and weight between male and female athletes is suitable.
Statistical Significance: The study should clearly report p-values and confidence intervals for all statistical comparisons to assess the significance of the observed differences.

Physiological Perspective
Weaknesses:
Limited Mechanistic Insights: The study primarily describes injury patterns without delving into the underlying physiological mechanisms.
Lack of Risk Factor Analysis: While the study identifies some potential risk factors (e.g., gender, age, type of activity), a more in-depth analysis of risk factors, such as training load, playing position, and previous injury history, is needed to understand the complex interplay of factors contributing to injury.

Associate Editor

MAJOR REVISION 7 Jan 2025

Although further research needs to examine the underlying physiological and biomechanical mechanisms that contribute to the observed gender differences in injury patterns, more rigorous studies are needed in

terms of epidemiological characteristics, appropriate statistical evaluations, and adequate scientific support in this regard.

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Point by Point

We sincerely thank the reviewers and the editorial team for their valuable time and constructive comments on improving our manuscript. The authors have carefully considered all the feedback and provided detailed point-by-point responses to each comment, along with the revisions made in the manuscript. We are also more than willing to incorporate any additional suggestions to further enhance the quality of the article.

Thanks

Dr. Mohammad Seyedahmadi

Reviewer Comment 1: Study Design and Analysis Depth

- **Comment:** The study effectively compared injury patterns between male and female athletes, but it has many weaknesses in terms of depth of analysis.
- **Response:** The study's descriptive cross-sectional design was clearly stated in the title (page 1). We acknowledge that further analysis, such as assessing injury severity and return-to-play time, would enhance the findings. Future research will address these areas using longitudinal methods to provide a more comprehensive analysis.

Reviewer Comment 2: Recall Bias

- **Comment:** Relying on athletes' recall for injury information may introduce bias.
- **Response:** We addressed the recall bias concern in the discussion (page 7). We acknowledge this limitation and propose that future research should use longitudinal designs and include medical reports to verify injury data.

Reviewer Comment 3: Selection Bias

- **Comment:** The study population is limited to elite Iranian handball players, which limits generalizability.
- **Response:** The study focuses on elite players to understand injuries at the highest competition level. However, we agree that future studies should include athletes from different skill levels and regions to improve generalizability (page 7).

Reviewer Comment 4: Ethical Consideration

- **Comment:** Ethical approval is mentioned, but details are missing.
- **Response:** The study received ethical approval from the Sports Science Research Institute under the code IR.SSRC.REC.1403.068. This is documented on page 3, and in the methods section.https://ethics.research.ac.ir/EthicsProposalView.php?id=516842

Reviewer Comment 5: Time Frame

- **Comment:** Which years does the study cover?
- **Response:** Data collection occurred over two months in 2024, as detailed on page 3.

Reviewer Comment 6: Statistical Considerations

- **Chi-Square Test:** The use of chi-square test for categorical variables is appropriate and documented on page 3, 5.
- **Independent Samples t-Test:** This test was used to compare continuous variables like age, height, and weight between genders (page 4).
- **Statistical Significance:** We reported p-values for all tests, as seen in Table 1 on page 5.

Reviewer Comment 7: Physiological Perspective

- **Comment:** The study lacks a deep analysis of physiological mechanisms behind injuries.
- **Response:** We acknowledge the limitation of not analyzing underlying physiological mechanisms. Our focus was primarily on injury patterns and prevalence. However, we recommend future studies to include biomechanical and physiological analyses to identify injury mechanisms (page 7).

Major Comments

1. **Question:** The study design should be explicitly stated in the title or abstract.
   Response:
   The study design is stated as **"a cross-sectional study"** in both the title and the abstract.
   - **Location in text:** Page 1, Title, and Abstract section.

2. **Question:** Details on statistical methods and handling of quantitative variables are lacking.
   Response:
   Statistical methods, including **Chi-Square test** and **Independent Samples t-test**, are described in the **Materials and Methods** section. These methods are appropriate for comparing continuous and categorical variables between genders.
   - **Location in text:** Page 3, Materials and Methods section.

3. **Question:** The abstract does not discuss potential biases or limitations.
   Response:
   The **Discussion section** highlights **recall bias** and **selection bias** as limitations of the study. These biases are also addressed in the **Conclusion** with suggestions for future research.
   - **Location in text:** Page 3,7, Discussion section.

Minor Comments

4. **Question:** The setting and specific dates of data collection should be included.
   Response:
   The study was conducted in **2024**, and the data collection period lasted for **two months**. These details are provided in the **Materials and Methods** section.
   - **Location in text:** Page 3, Materials and Methods section.

5. **Question:** The rationale for the sample size should be provided.
   Response:
   The sample size was estimated using the **Morgan table**, with **276 elite players** included in the study. The sample covers a significant portion of **Premier League and Division One players** in Iran.

- **Location in text:** Page 3, Materials and Methods section.

6. **Question:** Generalizability and funding information should be addressed.
   Response:
   The **Discussion section** acknowledges that the findings may not be generalizable to other populations, as the sample is limited to **elite Iranian handball players**. The study's **funding source** is mentioned in the **Funding** section.
   - **Location in text:** Page 7, **Funding/Support section**.

2 Revision 1

1 comment · 18 Jan 2025

Associate Editor

MINOR REVISION 18 Jan 2025

This is a good start to an abstract for your study. Here are a few suggestions for improvement:

1. Strengthen the Introduction:

Highlight the significance: Briefly mention the impact of injuries on player careers, team performance, and the overall health of handball players.
State the research gap: Briefly mention any existing gaps in knowledge regarding injury prevalence in Iranian handball. For example, are there specific injury patterns in Iranian handball that differ from those in other countries?
2. Enhance the Methods Section:

Specify the study period: Include the timeframe of the study (e.g., "This cross-sectional study was conducted between [Start Date] and [End Date]").
Detail the inclusion and exclusion criteria: Clearly define who was included and excluded from the study population.
Elaborate on data collection: Briefly describe how the data were collected (e.g., "Data was collected through self-reported questionnaires and medical records").
Explain statistical analysis: Briefly mention any other statistical analyses performed (e.g., "Descriptive statistics were used to summarize the data. Logistic regression was used to investigate the association between gender and injury risk").
3. Expand on the Results:

Provide specific injury types: Mention the most common specific injuries (e.g., ankle sprains, knee ligament injuries, shoulder dislocations).
Quantify injury severity: If possible, provide data on the severity of injuries (e.g., number of games missed, time lost to injury).
Include specific comparisons: For example, "Men were significantly more likely to experience [specific injury] compared to women."
4. Strengthen the Conclusion:

Provide practical implications: Discuss the practical implications of the findings for injury prevention and management in Iranian handball.
Suggest future research directions: Suggest areas for future research, such as longitudinal studies to investigate the long-term consequences of injuries.
Other parts of the manuscript should be revised in the same way.

3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Point by point

Dear Editor and Reviewers,

We sincerely thank you for your valuable feedback and constructive comments, which have significantly enhanced the quality of our manuscript. We greatly appreciate the time and effort you have dedicated to reviewing our work.
The authors have carefully addressed each of the reviewers' comments point by point and have incorporated the necessary revisions into the manuscript. Below, we provide detailed responses to each comment, along with the corresponding changes made to the text.
We hope that the revised manuscript meets your expectations and look forward to your final decision.

Point 1: Highlight the significance:
Briefly mention the impact of injuries on player careers, team performance, and the overall health of handball players.

Author's Response: Page 2,
Injuries in handball can profoundly impact players' careers, team performance, and overall health, often leading to prolonged recovery periods and interruptions in training and competition.

Point 2: State the research gap:
Briefly mention any existing gaps in knowledge regarding injury prevalence in Iranian handball. For example, are there specific injury patterns in Iranian handball that differ from other countries?

Author's Response: Page 2,
While previous research has significantly contributed to understanding injury patterns in handball, most studies have focused on male players or specific injury types, leaving gaps in understanding injuries in female players and comprehensive injury patterns.
Moreover, limited research exists on injuries specific to Iranian handball players, despite potential differences in playing styles, training regimens, and environmental factors that may influence injury prevalence and patterns. Understanding these differences is essential to tailoring prevention and rehabilitation strategies effectively.
This study aims to address these gaps by providing a comprehensive analysis of injury patterns in elite male and female Iranian handball players. It explores the prevalence, severity, and gender differences in upper and lower extremity injuries and identifies specific risk factors associated with injuries. The findings will assist coaches, physiotherapists, and sports medicine professionals in developing evidence-based injury prevention and rehabilitation programs tailored to the needs of Iranian handball players at all levels.

Point 3: Specify the study period:
Include the timeframe of the study (e.g., "This cross-sectional study was conducted between [Start Date] and [End Date]").

Author's Response: Page 3,
The research was descriptive-cross-sectional and conducted as a retrospective epidemiological study of sports injuries among elite male and female handball players in Iran between October 22 and December 25, 2024.

Point 4: Detail the inclusion and exclusion criteria:
Clearly define who was included and excluded from the study population.

Author's Response: Page 3,
Inclusion Criteria:
The study included elite Iranian handball players, both male and female, who actively participated in professional handball leagues. These leagues included the Premier League, Division One and Division Two. Additionally, participants were required to voluntarily complete the online questionnaire designed for the study.

Exclusion Criteria:
Participants were excluded from the study if they did not fully complete the online questionnaire. Furthermore, individuals who did not meet the definition of an elite handball player—defined as active participation in one of the specified professional leagues—were also excluded.

Point 5: Elaborate on data collection:
Briefly describe how the data was collected (e.g., "Data was collected through self-reported questionnaires and medical records").

Author's Response: Page 3,
Data collection was conducted over two months, during which participants were reminded to complete the questionnaire through personalized follow-up messages to enhance the response rate. The data were collected exclusively through self-reported online questionnaires, which captured detailed information about demographics, injury history, type and severity of injuries, and training and competition details. Once collected, the data were systematically organized and entered into SPSS software for statistical analysis.

Point 6: Explain statistical analysis:
Briefly mention any other statistical analyses performed (e.g., "Descriptive statistics were used to summarize the data. Logistic regression was used to investigate the association between gender and injury risk").

Author's Response: **Page 3,**
Statistical Analysis

Descriptive statistics, including percentages, means, and standard deviations, were used to summarize the demographic and injury-related data. Independent samples t-tests were employed to compare continuous variables between groups, while chi-square tests were applied to examine associations between categorical variables. A significance level of 0.05 was used for all analyses. All statistical analyses were conducted using SPSS version 22.

Point 7: Quantify injury severity: If possible, provide data on the severity of injuries (e.g., number of games missed, time lost to injury).

Author's Response: Author's Response:
Thank you for your insightful comment. Unfortunately, specific data on the severity of injuries, such as the number of games missed or time lost to injury, were not collected in this study. However, we acknowledge the importance of this information for understanding the broader impact of injuries on athletes' careers and performance. Future research should prioritize the inclusion of such data to provide a more comprehensive view of injury severity and its implications for handball players. We have added a note about this limitation to the discussion section to emphasize the need for further investigation in this area.

Point 8: Provide specific injury types: Mention the most common specific injuries (e.g., ankle sprains, knee ligament injuries, shoulder dislocations).
Prevalence of Specific Injury Types

Author's Response: Page 4,
Muscular injuries were the most common (68.29%), followed by joint injuries (56.52%) and bony injuries (39.28%). Men accounted for a significantly higher percentage of all injury types compared to women, particularly muscular injuries (82.31%) (Table 3).

Point 9: Include specific comparisons: For example, "Men were significantly more likely to experience [specific injury] compared to women."

Author's Response: Page 6,
Gender-Specific Comparisons
Men were significantly more likely to experience muscular injuries (82.31%) compared to women (14.02%). Injuries to the lower limbs were more common in men (69.51%) than in women (46.43%), making them the most frequent injury location in both groups. Men reported a higher rate of non-contact injuries (60.36%), while women experienced more contact injuries (51.78%). Women were more likely to sustain injuries during practice (53.57%), whereas men were more likely to sustain injuries during competitions (49.39%). The majority of injuries in both genders occurred without the use of supportive equipment (62.50% in women and 67.68% in men).

Point 10: Provide practical implications: Discuss the practical implications of the findings for injury prevention and management in Iranian handball

Author's Response: Page 7,
The findings of this study have practical implications for designing injury prevention programs tailored to the specific needs of male and female handball players. Coaches and medical professionals can utilize these results to develop targeted training protocols, such as proprioceptive, strength, and balance exercises, alongside promoting the consistent use of protective equipment to reduce injury risk.

Point 11: Suggest future research directions: Suggest areas for future research, such as longitudinal studies to investigate the long-term consequences of injuries. Other parts of the manuscript should be revised in the same way.

Author's Response: Page 7,
To address these limitations, future research should employ longitudinal designs and include medical records and objective injury reports to gain more accurate insights into injury mechanisms and risk factors. Moreover, future studies should investigate environmental factors such as playing surfaces, training intensity, and match conditions to identify specific risk factors and develop more comprehensive prevention strategies.

3 Revision 2

1 comment · 1 Feb 2025

Associate Editor

ACCEPT 1 Feb 2025

It can be accepted.