

Originales

Injury patterns and associated factors among Portuguese federated rink hockey players: a cross-sectional study



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ABSTRACT

Objective: To describe injury patterns and identify factors associated with the number of reported injuries among Portuguese senior first-division rink hockey players during the 2024–2025 competitive season.

Methods: This cross-sectional observational study included Portuguese senior first-division rink hockey players who completed an anonymous electronic questionnaire regarding injuries sustained during the 2024–2025 season. Demographic and sport-related characteristics, injury location, type, mechanism, severity, supervised strength training, and physiotherapy availability were collected. Descriptive statistics and independent-samples t-tests were used to compare reported injury numbers between participant groups.

Results: 124 athletes participated (mean age 23.8 ± 5.3 years; mean federated practice 16.9 ± 5.6 years), of whom 115 (92.7%) reported at least one injury. Lower limb injuries were most frequent (143; 36%), followed by head and neck injuries (119; 30%). Facial injuries accounted for 94 (79%) head and neck injuries. Trauma from stick or ball contact was the most frequent mechanism (105; 26.4%). Overall, 119 (30%) injuries were severe and 25 (6.4%) required surgery. Playing position was associated with reported injury numbers, with goalkeepers sustaining approximately 52% fewer injuries than field players ($p = 0.00066$). No significant associations were observed with sex, training frequency, years of federated practice, supervised strength training, or physiotherapy availability.

Conclusions: Lower limb and facial injuries were the most frequently reported patterns. Playing position was the only participant characteristic significantly associated with reported injury numbers. These findings highlight potential targets for injury prevention, particularly lower limb prevention and facial protection, and support future prospective research.

Keywords: Athletic injuries; Hockey; Athletes; Epidemiology.

Patrones de lesiones y factores asociados en jugadores portugueses federados de hockey sobre patines: un estudio transversal

RESUMEN

Objetivo: Describir los patrones de lesión e identificar factores asociados con el número de lesiones notificadas en jugadores portugueses de hockey sobre patines de primera división durante la temporada 2024–2025.

Método: Estudio observacional transversal mediante un cuestionario electrónico anónimo sobre las lesiones sufridas durante la temporada 2024–2025. Se recogieron datos demográficos y deportivos, características de las lesiones, entrenamiento de fuerza y fisioterapia. Se utilizaron estadísticos descriptivos y pruebas t de muestras independientes.

Resultados: Participaron 124 atletas (edad media $23,8 \pm 5,3$ años; práctica federada media $16,9 \pm 5,6$ años); 115 (92,7%) notificaron al menos una lesión. Las lesiones de las extremidades inferiores fueron las más frecuentes (143; 36%), seguidas de las de cabeza y cuello (119; 30%). Las lesiones faciales representaron 94 (79%) lesiones de cabeza y cuello. El traumatismo por contacto con stick o pelota fue el mecanismo más frecuente (105; 26,4%). En total, 119 (30%) lesiones fueron graves y 25 (6,4%) requirieron cirugía. La posición de juego se asoció con el número de lesiones, con aproximadamente un 52% menos en los porteros que en los jugadores de campo ($p = 0,00066$). No hubo asociaciones significativas con sexo, frecuencia de entrenamiento, años de práctica, entrenamiento de fuerza o fisioterapia.

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Conclusiones: Las lesiones de las extremidades inferiores y faciales fueron las más frecuentes. La posición de juego fue la única característica asociada significativamente con el número de lesiones. Estos hallazgos señalan objetivos preventivos y respaldan estudios prospectivos futuros.

Palabras clave: Lesiones deportivas; Hockey; Deportistas; Epidemiología.

Padrões de lesão e fatores associados em jogadores portugueses federados de hóquei em patins: um estudo transversal

RESUMO

Objetivo: Descrever os padrões de lesão e identificar fatores associados ao número de lesões reportadas em jogadores portugueses de hóquei em patins da primeira divisão durante a época 2024–2025.

Método: Estudo observacional transversal através de um questionário eletrónico anónimo sobre as lesões sofridas durante a época 2024–2025. Foram recolhidos dados demográficos e desportivos, características das lesões, treino de força e fisioterapia. Foram utilizadas estatísticas descritivas e testes t para amostras independentes.

Resultados: Participaram 124 atletas (idade média $23,8 \pm 5,3$ anos; prática federada média $16,9 \pm 5,6$ anos); 115 (92,7%) reportaram pelo menos uma lesão. As lesões dos membros inferiores foram as mais frequentes (143; 36%), seguidas das lesões da cabeça e pescoço (119; 30%). As lesões faciais corresponderam a 94 (79%) das lesões da cabeça e pescoço. O traumatismo por contacto com stick ou bola foi o mecanismo mais frequente (105; 26,4%). No total, 119 (30%) lesões foram graves e 25 (6,4%) necessitaram de cirurgia. A posição de jogo associou-se ao número de lesões, com aproximadamente 52% menos lesões nos guarda-redes do que nos jogadores de campo ($p = 0,00066$). Não houve associações significativas com sexo, frequência de treino, anos de prática, treino de força ou fisioterapia.

Conclusões: As lesões dos membros inferiores e faciais foram as mais frequentes. A posição de jogo foi a única característica associada significativamente ao número de lesões. Estes resultados destacam potenciais alvos preventivos e apoiam estudos prospetivos futuros.

Palavras-chave: Lesões desportivas; Hóquei; Atletas; Epidemiologia.

BACKGROUND

Rink hockey is a fast-paced team sport characterized by repetitive skating, rapid directional changes, and frequent interactions involving sticks, ball, and player contact. These sport-specific demands expose athletes to a wide spectrum of injuries, including both acute traumatic events and overuse syndromes.

In recent years, the epidemiology of injuries in rink hockey has been increasingly investigated, revealing consistent injury patterns across different competitive levels and populations. Previous studies have reported injury incidence rates ranging from approximately 4.5 to 5.9 injuries per 1000 hours of exposure, highlighting the substantial injury burden associated with the sport^{1,2}. Lower limb injuries are consistently reported as the most common injuries, particularly involving the hip/groin and thigh. This pattern reflects the substantial biomechanical demands imposed by skating, rapid accelerations, and repetitive mechanical loading^{1,3,4}. In addition to lower limb injuries, head and facial injuries represent a significant proportion of traumatic events, often resulting from direct impacts with the stick or ball³. Musculotendinous injuries, contusions, and fractures have also been commonly reported, reflecting the multifactorial injury mechanisms present in rink hockey, including both contact and non-contact mechanisms^{1,3}.

Previous studies have also explored factors associated with injury occurrence. Sex-specific analyses have demonstrated similar overall injury incidence between male and female players, although match exposure has been associated with higher injury risk compared to training⁵. Furthermore, positional differences in injury patterns have been observed in hockey-related sports, with variations in exposure, movement demands, and protective equipment contributing to differences in injury risk².

Comparisons with ice hockey, a related high-intensity sport with greater body contact and more extensive protective equipment, provide additional insight into injury mechanisms and risk factors. Both sports demonstrate a predominance of lower limb injuries and

positional variation in injury risk; however, rink hockey appears to present a higher relative frequency of head and facial injuries, likely related to greater exposure to stick and ball impacts and less extensive facial protection^{2,3}.

Collectively, these findings provide valuable insights into injury patterns and factors associated with injury occurrence in rink hockey. However, limited data are available regarding injury patterns among Portuguese federated rink hockey players. A better understanding of injury patterns and associated factors in this population is essential to inform targeted injury prevention strategies and optimize athlete safety and performance.

Therefore, the aim of this study was to describe injury patterns and identify factors associated with self-reported injuries among Portuguese federated rink hockey players using a cross-sectional survey.

MATERIALS AND METHODS

Study Design and Participants

This cross-sectional observational study investigated self-reported injuries among Portuguese federated male and female senior first-division rink hockey players during the 2024–2025 competitive season. Eligible participants were athletes competing in the Portuguese first division during the study period. Data were collected using a structured anonymous electronic questionnaire distributed to first-division clubs through coaching staff and team representatives between July and September 2025. Incomplete questionnaires were excluded from the analysis. A total of 124 athletes met the inclusion criteria and were included in the study.

This study was conducted in accordance with the principles of the Declaration of Helsinki. Participation was voluntary, and electronic informed consent was obtained before questionnaire completion. The study involved an anonymous questionnaire administered to adult athletes and did not involve patients, clinical

records, or experimental procedures. All data were anonymized to ensure confidentiality.

Data Collection

Data were collected using a structured questionnaire that included demographic and sport-specific information such as age, sex, years of federated practice, playing position, dominant hand, and weekly training frequency. The questionnaire was originally developed in Portuguese; an English translation is provided in [Appendix 1](#).

Injury data included the number of injuries sustained, anatomical location, injury type, injury mechanism, severity, and requirement for surgical intervention. Injuries were defined as any physical complaint sustained in training or competition during the 2024-2025 season that resulted in interruption of sport participation for at least one day. Severe injuries were defined as time-loss injuries resulting in more than 28 days of absence from sport participation.

Additional variables included participation in supervised strength training and the availability of physiotherapy support during training or competition.

Injury Classification

Injuries were classified according to anatomical region as head and neck, trunk, upper limb, or lower limb.

Mechanisms of injury were categorized as trauma resulting from stick or ball contact, overload, fall, collision with another player, and other mechanisms.

Injury types were categorized as fracture, muscle injury/contracture, haematoma/contusion, wound/laceration, and tendon injury/inflammation. Less frequent injuries that did not fit these predefined categories were grouped under the category "Other".

Statistical Analysis

Descriptive statistics were used to summarize demographic characteristics and injury distribution. Continuous variables were expressed as mean $\pm$ standard deviation, whereas categorical variables were expressed as frequencies and percentages. Comparative analyses were performed to evaluate differences in the number of reported injuries according to participant characteristics, including sex, playing position, years of federated practice, weekly training frequency, participation in supervised strength training, and physiotherapy availability. Group comparisons were performed using independent-samples t-tests. Statistical significance was set at $p < 0.05$. Statistical analyses were performed using IBM SPSS Statistics version 24 (IBM Corp., Armonk, NY, USA).

RESULTS

Participant Characteristics

A total of 124 federated rink hockey players participated in the study, including both male and female athletes. Participant demographic and training characteristics, including comparisons by sex, are presented in [Table 1](#). Male players were older, had more years of federated practice, and reported a higher weekly training frequency than female players. Right-hand dominance was most common, although the proportion of left-handed players was higher than the approximately 10% reported in the general population⁶. The distribution of playing positions reflected standard rink hockey team composition, with a predominance of field players compared with goalkeepers (4:1).

Table 1. Participant demographic and training characteristics

Variable	Overall(n = 124)	Female	Male	p value
Age, mean $\pm$ SD (years)	23.8 $\pm$ 5.3	22.4 $\pm$ 4.9	25.1 $\pm$ 4.7	0.0016
Years of federated practice, mean $\pm$ SD	16.9 $\pm$ 5.6	15.0 $\pm$ 5.4	18.8 $\pm$ 5.0	<0.001
Training sessions per week, mean $\pm$ SD	3.9 $\pm$ 1.1	3.25 $\pm$ 0.5	4.71 $\pm$ 1.2	<0.001
Dominant hand, right, n (%)	90 (72.6%)	—	—	—
Field players, n (%)	99 (79.8%)	—	—	—
Players with strength training supervision, n (%)	78 (63.4%)	—	—	—
Players with physiotherapist access, n (%)	71 (57.7%)	—	—	—
Abbreviations: SD, standard deviation.				
Continuous variables are presented as mean $\pm$ SD. Categorical variables are presented as n (%).				
P values for continuous variables compare female and male athletes using independent-samples t-tests.				

Injury Occurrence and Severity

Most athletes reported at least one injury during the season. The mean number of reported injuries per athlete was 3.19 $\pm$ 4.06. Overall, 119 (30%) reported injuries were classified as severe,

resulting in more than 28 days of time loss, while 25 (6.4%) required surgical intervention. Injury occurrence and severity are presented in [Table 2](#).

Table 2. Injury characteristics among Portuguese federated rink hockey players

Variable	Value
Injury Occurrence	
Athletes reporting ≥ 1 injury	115 (92.7%)
Mean number of reported injuries per player, mean $\pm$ SD	3.19 $\pm$ 4.06

Variable	Value
Anatomical Region	
Lower limb	143 (36.0%)
Head and neck	119 (30.0%)
Upper limb	75 (19.0%)
Trunk	59 (15.0%)
Injury Type	
Fracture	42 (10.5%)
Haematoma/contusion	41 (10.4%)
Tendon injury/inflammation	35 (8.9%)
Muscle injury/contracture	34 (8.6%)
Wound/laceration	33 (8.3%)
Other	185 (46.7%)
Mechanism	
Stick or ball trauma	105 (26.4%)
Overload	71 (18.0%)
Falls	64 (16.1%)
Player collisions	51 (13.0%)
Other mechanisms	105 (26.4%)
Injury severity	
Severe injuries (>28 days of time loss), n (% of injuries)	119 (30.0%)
Injuries requiring surgical treatment, n (% of injuries)	25 (6.4%)
Abbreviations: SD, standard deviation	

Anatomical Distribution of Injuries

Lower limb injuries were the most frequently reported, followed by injuries affecting the head and neck region, while upper limb and trunk injuries were less common (Table 2). Within the head and neck category, facial injuries accounted for 79% of cases and represented the most frequent individual anatomical location overall. Lower limb injuries were distributed across multiple anatomical regions without a single dominant location.

Injury Types and Mechanisms

The distribution of injuries by type and mechanism is presented in Table 2. Fractures and soft tissue injuries were among the most frequently reported injury types, while trauma resulting from stick or ball contact was the predominant injury mechanism.

Factors Associated with the Number of Reported Injuries

Playing position was significantly associated with the number of reported injuries. Goalkeepers sustained approximately 52% fewer injuries than field players ($p = 0.00066$), with this difference being particularly pronounced for head and neck injuries, for which goalkeepers sustained approximately 83% fewer injuries (Supplementary Table S1).

Most athletes reported participation in supervised strength training (63.4%) and access to physiotherapy during training or competition (57.7%). However, no statistically significant associations were observed between number of reported injuries and either supervised strength training or physiotherapy availability. Similarly, no statistically significant associations were found between number of reported injuries and sex, weekly training frequency, or years of federated practice. Additional analyses exploring injury occurrence across these variables are provided in the Supplementary Material (Supplementary Tables S2-6).

DISCUSSION

This study provides a detailed overview of injury patterns among Portuguese senior first-division rink hockey players and identifies factors associated with injury occurrence that may inform injury prevention strategies.

The principal finding was the predominance of lower limb injuries, which accounted for more than one-third of all injuries. This finding is consistent with previous literature^{1,3} and may reflect the substantial biomechanical demands associated with skating, including repetitive propulsion, rapid accelerations and decelerations, and repetitive mechanical loading. These demands may contribute to both acute injuries and overuse conditions affecting the lower extremities. The consistency of this finding with previous epidemiological studies supports the relevance of lower limb injuries as an important target for injury prevention in rink hockey, despite differences in study populations and methodologies.

Head and neck injuries, particularly facial injuries, represented the second most common anatomical category and the most frequent individual injury location. The high frequency of facial injuries may be related to repeated exposure to stick and ball impacts^{3,4}, consistent with trauma being the predominant reported injury mechanism and with previous studies reporting a substantial proportion of head and facial injuries in rink hockey^{3,4}. Differences in injury definitions, competitive level, and protective equipment between studies may contribute to variations in the reported frequency of these injuries.

Playing position was the only participant characteristic significantly associated with the number of reported injuries, consistent with previous literature highlighting positional differences in exposure, biomechanics, and injury patterns^{2,5}. Goalkeepers reported substantially fewer injuries overall than field players, particularly in the head and neck region. This difference may reflect lower exposure to high-speed skating and differences in protective equipment between positions. The marked reduction in head and neck injuries among goalkeepers is compatible with a potential protective effect of specialized equipment, although causality cannot be established in the present study.

No significant associations were observed between the number of reported injuries and sex, weekly training frequency, years of federated practice, strength training participation, or physiotherapy availability. These findings should be interpreted cautiously, as the absence of statistically significant associations does not necessarily indicate an absence of effect. Previous studies have also reported differences in injury patterns according to sex and exposure characteristics, although findings have not been consistent across populations^{2,5}. Differences in study design, sample characteristics, injury definitions, and exposure assessment may partly explain these discrepancies. In the present population, these findings suggest that playing position may be more relevant to injury occurrence than the general training and support characteristics assessed.

Approximately 30% of reported injuries were classified as severe, highlighting the potential clinical impact of injuries in rink hockey athletes. Severe injuries may result in prolonged absence from sport, functional limitations, and increased risk of subsequent injury. This finding reinforces the importance of prevention strategies addressing both the high frequency of lower limb injuries and the potentially greater consequences associated with severe injuries.

From a clinical perspective, these findings highlight several important implications for injury prevention. First, the predominance of lower limb injuries supports consideration of targeted prevention programmes incorporating strength development, neuromuscular control, proprioception, and structured load management. Exercise-based injury prevention programmes have been shown to significantly reduce overall sports injury incidence, with systematic reviews reporting reductions of up to 37% across multiple sports disciplines⁷. Given the high proportion of lower limb injuries observed in this population, structured neuromuscular prevention strategies may be particularly relevant for rink hockey athletes. Second, the high frequency of facial injuries supports consideration of greater use of facial protective equipment, particularly among field players. Evidence from contact sports suggests that protective equipment, particularly full facial protection, may reduce the severity of head injuries in ice hockey⁸. Given the positional differences observed in this study, reinforcement of appropriate protective equipment policies may represent a potentially simple and practical preventive strategy.

This study has several limitations. First, the self-reported design may have introduced recall bias and potentially resulted in underreporting of injuries, particularly minor injuries. In addition, injuries were self-reported and were not independently verified through medical records, which may have introduced misclassification bias. For example, some participants may have classified minor procedures, such as wound suturing, as surgical interventions, potentially leading to an overestimation of surgical treatment in this dataset. Second, the absence of exposure data prevented calculation of injury incidence rates per 1000 hours, which are commonly used in sports injury epidemiology to account for differences in exposure. Third, the cross-sectional design precludes assessment of temporal associations and does not allow causal inference. Nevertheless, the consistency of the main injury distribution findings with previous epidemiological studies supports the relevance of the observed patterns despite these methodological limitations. Future prospective studies should incorporate standardized injury definitions, medical verification of diagnoses, exposure tracking, and position-specific injury surveillance to allow calculation of injury incidence rates and better characterize factors associated with injury occurrence.

Despite these limitations, this study provides novel data on injury patterns among Portuguese federated rink hockey players, a population for which published evidence remains limited. The

findings identify clinically relevant targets for injury prevention and may support the development of future sport-specific prevention strategies and prospective injury surveillance studies.

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SUPPLEMENTARY MATERIAL

Appendix 1. Questionnaire used for data collection

This questionnaire was developed by the authors for the purpose of this study and was originally administered in Portuguese.

Credits: Alice Vicente, João Rosa Silva, Joana Alves de Campos, Isabel Crespo, Diogo Rodrigues da Silva, José Maria Moreira

The following questionnaire refers to injuries sustained during the 2024–2025 competitive season.

An injury was defined as any physical complaint sustained during training or competition that resulted in interruption of sport participation for at least one day. Severe injuries were defined as time-loss injuries resulting in more than 28 days of absence from sport participation.

Section	Question	Response Options
Demographics	Age (years)	_____
	Sex	☐ Male ☐ Female

Section	Question	Response Options
	Years of federated practice	_____
	Playing position	☐ Goalkeeper ☐ Field player
	Dominant hand	☐ Right ☐ Left
	Training sessions/week	_____
Injury history	Number of injuries	_____
	Severe injuries (>28 days)	_____
	Injuries requiring surgery	_____
Injury characteristics	Anatomical region	☐ Head/neck ☐ Trunk ☐ Upper limb ☐ Lower limb
	Specific location	_____
	Type of injury	☐ Fracture ☐ Muscle ☐ Contusion ☐ Laceration ☐ Tendon ☐ Other: _____
	Mechanism	☐ Overload ☐ Fall ☐ Stick/ball ☐ Collision ☐ Other: _____
Additional info	Supervised strength training	☐ Yes ☐ No
	Physiotherapy support	☐ Yes ☐ No

Supplementary Material

Table S1. Association between playing position and the number of reported injuries

Variable	Field players	Goalkeepers	t value	p value
Total injuries, mean $\pm$ SD	3.57 $\pm$ 4.44	1.72 $\pm$ 1.40	4.49	0.00066
Head and neck injuries, mean $\pm$ SD	1.16 $\pm$ 1.88	0.2 $\pm$ 0.50	4.05	1.67e-5
Trunk injuries, mean $\pm$ SD	0.34 $\pm$ 0.86	0.08 $\pm$ 0.28	-2.49	0.014
Upper limb injuries, mean $\pm$ SD	0.86 $\pm$ 1.29	0.52 $\pm$ 0.65	-1.83	0.072
Lower limb injuries, mean $\pm$ SD	1.21 $\pm$ 1.57	0.92 $\pm$ 1.00	-1.16	0.25
Abbreviations: SD, standard deviation				
Statistical test: Independent-samples t-test.				

Table S2. Comparison of demographic and training characteristics by playing position

Variable	Field players	Goalkeepers	t value	p value
Age (years), mean $\pm$ SD	23.9 $\pm$ 4.8	22.4 $\pm$ 5.4	-1.30	0.20
Years of practice, mean $\pm$ SD	17.1 $\pm$ 5.1	15.5 $\pm$ 6.9	-1.09	0.28
Training sessions/week, mean $\pm$ SD	3.9 $\pm$ 1.2	3.8 $\pm$ 0.7	-0.54	0.59
Abbreviations: SD, standard deviation				
Statistical test: Independent-samples t-test.				

Table S3. Comparison of demographic and training characteristics by dominant hand

Variable	Right hand	Left hand	t value	p value
Age (years), mean $\pm$ SD	23.5 $\pm$ 5.0	24.0 $\pm$ 5.0	-0.52	0.60
Years of practice, mean $\pm$ SD	16.6 $\pm$ 5.5	17.1 $\pm$ 5.5	-0.38	0.71
Training sessions/week, mean $\pm$ SD	3.9 $\pm$ 1.2	3.8 $\pm$ 1.0	0.41	0.68
Abbreviations: SD, standard deviation				
Statistical test: Independent-samples t-test.				

Table S4. Comparison of injury counts by sex

Variable	Female	Male	t value	p value
Total injuries, mean $\pm$ SD	3.5 $\pm$ 4.0	2.9 $\pm$ 4.2	-0.79	0.43
Head and neck injuries, mean $\pm$ SD	1.1 $\pm$ 1.9	0.8 $\pm$ 1.6	-1.08	0.28
Trunk injuries, mean $\pm$ SD	0.30 $\pm$ 0.84	0.27 $\pm$ 0.73	-0.22	0.83
Upper limb injuries, mean $\pm$ SD	0.82 $\pm$ 1.21	0.75 $\pm$ 1.19	-0.33	0.74
Lower limb injuries, mean $\pm$ SD	1.2 $\pm$ 1.5	1.1 $\pm$ 1.5	-0.57	0.57
Abbreviations: SD, standard deviation				
Statistical test: Independent-samples t-test.				

Table S5. Comparison of injury counts by physiotherapy availability

Variable	PT	No PT	t value	p value
Total injuries, mean $\pm$ SD	2.86 $\pm$ 2.99	3.65 $\pm$ 5.21	-0.99	0.33
Head and neck injuries, mean $\pm$ SD	0.91 $\pm$ 1.65	1.04 $\pm$ 1.86	-0.38	0.70
Trunk injuries, mean $\pm$ SD	0.28 $\pm$ 0.68	0.28 $\pm$ 0.91	-0.05	0.96
Upper limb injuries, mean $\pm$ SD	0.75 $\pm$ 1.12	0.85 $\pm$ 1.30	-0.44	0.66
Lower limb injuries, mean $\pm$ SD	0.92 $\pm$ 0.92	1.48 $\pm$ 1.96	-1.93	0.057
Abbreviations: PT, physiotherapy; SD, standard deviation				
Statistical test: Independent-samples t-test.				

Table S6. Comparison of injury counts by strength training participation

Variable	ST	No ST	t value	p value
Total injuries, mean $\pm$ SD	2.9 $\pm$ 4.0	3.8 $\pm$ 4.3	-1.14	0.26
Head and neck injuries, mean $\pm$ SD	0.96 $\pm$ 1.88	0.98 $\pm$ 1.48	-0.05	0.96
Trunk injuries, mean $\pm$ SD	0.26 $\pm$ 0.71	0.33 $\pm$ 0.90	-0.49	0.63
Upper limb injuries, mean $\pm$ SD	0.68 $\pm$ 1.00	0.98 $\pm$ 1.47	-1.21	0.23
Lower limb injuries, mean $\pm$ SD	0.97 $\pm$ 1.40	1.47 $\pm$ 1.55	-1.76	0.08
Abbreviations: SD, standard deviation; ST, strength training				