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Player Health Surveillance Report

Olympic Football Tournaments Paris 2024

Contents

Foreword 3

At a glance 4

- FIFA player health surveillance 4
- Potential injury situations 5
- Facts and figures from the tournaments 6

Key findings 7

- Injury incidence 7
- Injury severity and burden 9
- Tissue types 11
- Injury mechanisms and situations 12
- Illnesses 13
- Mental health problems 13
- Potential injury situations 14
- Referee actions 15

Methods 16

- Player health surveillance 16
- Analysis of potential match injuries 17

Definitions 18

FIFA Medical's initiatives at the tournaments 20

FIFA's global player health surveillance programme 21

Report information 22

Foreword

Sport enhances the physical, social and mental well-being of millions worldwide. The men's and women's football tournaments receive equal attention at the Olympics, highlighting the importance of gender equality in sport, with football becoming a vehicle for promoting not only the Olympic values of excellence, respect and friendship, but also health.

FIFA Medical is committed to boosting player welfare by reducing injury and illness risks in football, especially as we continue to grow and support the game globally. To develop effective prevention strategies, it is essential to have up-to-date data on the key health challenges faced by players. FIFA cooperates closely with the Medical and Scientific Department of the International Olympic Committee (IOC) to assess injuries and illnesses affecting players at the Olympic Football Tournaments.

The FIFA Medical global player health surveillance programme provides critical insights into the frequency, severity and nature of health issues at the highest levels of the game. Since 2000, FIFA has conducted these studies at the Olympics, enabling us to track trends over time.

This report presents comprehensive data from the Olympic Football Tournaments Paris 2024. In keeping with the FIFA Medical strategy, it includes an analysis of mental health alongside physical injuries and illnesses, underscoring FIFA's holistic approach to player welfare.

We extend our sincere gratitude to the team medical staff and FIFA match doctors present at Paris 2024, our international surveillance officers and the Medical and Scientific Department of the IOC for their invaluable support. Their expertise and dedication remain essential as we strive to protect player health and elevate football worldwide.

Football: Enjoyment, Competition and Health!

Dr Andy Massey
FIFA Medical Director

At a glance

FIFA player health surveillance

Methods

All players at the Olympic Football Tournaments Paris 2024 were invited to participate in the player health surveillance programme. If a player who had agreed to take part in the research sustained an injury or illness during the tournament period, their team's medical staff recorded details of the case in a secure FIFA database. This included information such as the injury location, type and circumstances, or the type of illness, as well as the resulting amount of time for which the player was unable to participate in football. Each team also recorded the amount of training and match play completed by each player during the tournament period.

Injuries and illnesses that led to the player seeking medical attention (medical-attention injuries/illnesses), and those that resulted in the player being unavailable for normal training or matches (time-loss injuries/illnesses) are presented separately in this report.

Main findings

- Compared to previous tournaments, the injury rate at the Olympic Football Tournaments in 2024 (women's and men's) was low.
- Although the overall injury rate was similar among men and women, the rate of training injuries was higher among men, while the rate of match injuries was higher among women.
- The illness rate was substantially higher among women than among men.
- For men, the most commonly injured body areas were the thigh, knee and lower leg. For women, they were the ankle, thigh, knee and lower leg. Knee injuries led to the greatest time-loss burden among both women and men.
- Among men, the rate of thigh injuries was lower than normal.

Potential injury situations

To complement the FIFA player health surveillance, match analysts also recorded and categorised all events that caused a player to stay down for more than five seconds and/or request medical attention during a match. These are referred to as "potential injuries". The inclusion of potential injuries is intended to provide more in-depth information about injury mechanisms, enabling us initially to get a better understanding of playing situations that entail a higher risk of injury, and then to analyse the differences between at-risk situations that do and do not lead to injury. This could give rise to further advances in injury prevention strategies.

Main findings

- On average, there were 14.5 potential injuries per match at the Men's Olympic Football Tournament Paris 2024, and 12 potential injuries per match at the women's tournament. The average number of stoppages for potential injuries per match was ten in the men's competition and seven in the women's event.
- Potential injuries most often involved the foot, head and lower leg.
- Among men, the player actions that most often led to a potential injury were receiving a pass, aerial duels and passing. Among women, they were receiving a pass, making a block and passing.
- In one out of every four situations, players were assessed by medical staff on the pitch.
- On average, a player was substituted directly after a potential injury situation roughly once every two matches.

A detailed description of the project methods can be found towards the end of this report.

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Facts and figures from the tournaments

In total, **58** matches were played over **18** days between 24 July and 10 August 2024. All the results and match reports can be found at FIFA.com.

Men

Age (y)*	**23**	(17-38)
Height (cm)*	**174**	(140-198)
Weight (kg)*	**67**	(47-96)

Number of teams **16**

351 Number of players

189 Number of players consenting to surveillance

Number of matches **32**

Hours of match play (total)*	Hours of match play, average (range)*	Hours of training (total)*	Hours of training, average (range)*
693	**3.7** (0-10.6)	2,520	**13** (6-22)

Women

Age (y)*	**26**	(18-38)
Height (cm)*	**169**	(140-186)
Weight (kg)*	**62**	(47-79)

Number of teams **12**

267 Number of players

208 Number of players consenting to surveillance

Number of matches **26**

Hours of match play (total)*	Hours of match play, average (range)*	Hours of training (total)*	Hours of training, average (range)*
857	**4.1** (0-11.3)	2,917	**14** (4-23)

* This data relates to the players participating in the surveillance. The figures for age, height and weight are the average values and ranges across those players.

Key findings

Injury incidence

	Men	Women
Number of medical-attention injuries	30	40
Number of players with at least one medical-attention injury	29	37
Incidence rate of medical-attention injuries	**10.9** injuries per 1,000h	**10.6** injuries per 1,000h
Number of time-loss injuries	23	23
Number of players with at least one time-loss injury	22	21
Incidence rate of time-loss injuries	**7.2** injuries per 1,000h	**6.1** injuries per 1,000h
Incidence rate of time-loss injuries – match injuries	**14.4** injuries per 1,000h	**21** injuries per 1,000h
Incidence rate of time-loss injuries – training injuries	**3.6** injuries per 1,000h	**0.7** injuries per 1,000h

Match injury incidence rate

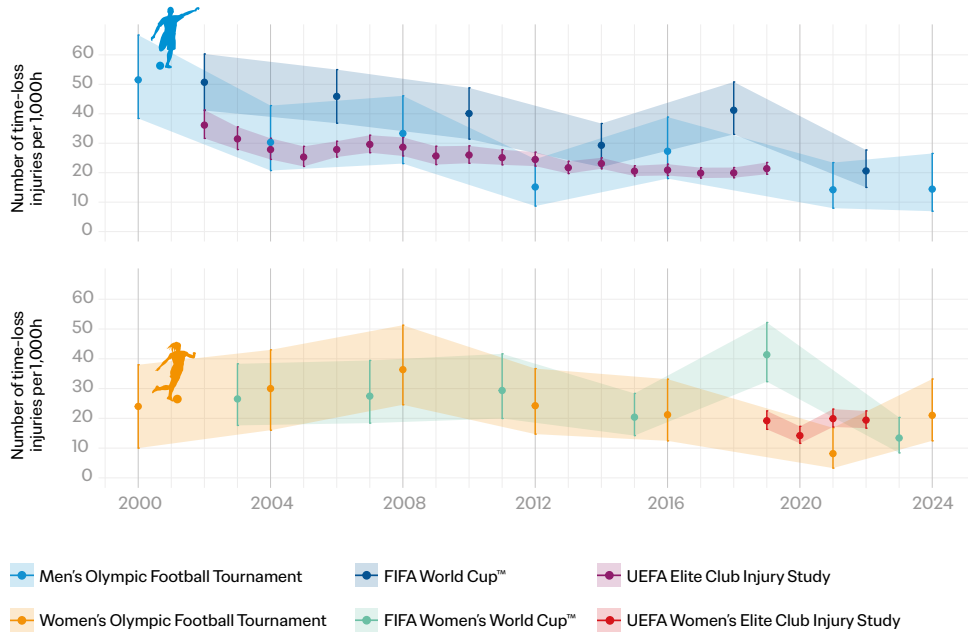

Figure 1. Incidence rates of match time-loss injuries from the Olympic Football Tournaments (2000 to 2024), FIFA World Cup™ (2002 to 2022), FIFA Women's World Cup™ (2003 to 2023), UEFA Elite Club Injury Study (2001-02 to 2018-19)1, and UEFA Women's Elite Club Injury Study (2018-19 to 2021-22)[2]

Note: The 2020 edition of the Olympics took place in 2021.

[1] Ekstrand J, Spreco A, Bengtsson H & Bahr R. Injury rates decreased in men's professional football: an 18-year prospective cohort study of almost 12 000 injuries sustained during 1.8 million hours of play. British Journal of Sports Medicine. 2021, 55(19): 1084-1091. Available at: doi.org/10.1136/bjsports-2020-103159.

[2] Hallén A, Tomás R, Ekstrand J, Bengtsson H, Van den Steen E, Hägglund M & Waldén M. UEFA Women's Elite Club Injury Study: a prospective study on 1527 injuries over four consecutive seasons 2018/2019 to 2021/2022 reveals thigh muscle injuries to be most common and ACL injuries most burdensome. *British Journal of Sports Medicine*. 2024, 58(3): 128-135. Available at: doi.org/10.1136/bjsports-2023-107133.

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"The FIFA Medical global player health surveillance programme provides critical insights into the frequency, severity and nature of health issues at the highest levels of the game. Since 2000, FIFA has conducted these studies at the Olympics, enabling us to track trends over time."

Injury severity and burden

Injuries by body area and time lost from normal football participation

Men	0 days*	1-3 days	4-7 days	8-28 days	29-90 days	91-180 days	>180 days	**Total**
Head	1	1						2
Shoulder	1		1					2
Hand	2							2
Chest	1							1
Lumbosacral	1	1	1					3
Thigh		2	1	4				7
Knee	1			1		2	1	5
Lower leg		4			1			5
Ankle			1	1				2
Foot		1						1
Total	7	9	4	6	1	2	1	30

Total number of time-loss days**	664

Time-loss burden rate	207 days per 1,000h

Women	0 days*	1-3 days	4-7 days	8-28 days	29-90 days	91-180 days	>180 days	**Total**
Head	2	1	1					4
Wrist	1							1
Lumbosacral		1						1
Groin	2	1						3
Thigh	4	1	1	1	1			8
Knee	4			1		1	1	7
Lower leg	2	2		2	1			7
Ankle	2		2	2	2			8
Foot			1					1
Total	17	6	5	6	4	1	1	40

Total number of time-loss days**	784

Time-loss burden rate	208 days per 1,000h

* Includes cases where players were withdrawn during a match due to injury, but returned to normal training the following day

** Estimated for several long-term injuries

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"To develop effective prevention strategies, it is essential to have up-to-date data on the key health challenges faced by players. FIFA cooperates closely with the Medical and Scientific Department of the International Olympic Committee (IOC) to assess injuries and illnesses affecting players at the Olympic Football Tournaments."

Figure 3. Injury statistics for selected body areas

Number of injuries during the tournament and resulting time-loss days. Thigh includes hamstrings and quadriceps muscles.

Tissue types

The pattern of injury by tissue type was similar for both sexes.

The most commonly injured tissue type was muscle/tendon (nine time-loss injuries among men and 12 among women), followed by ligament/joint capsule (five time-loss injuries among men and 12 among women).

Ligament/joint capsule injuries led to the greatest time-loss burden (men: 56 days per 1,000 hours; women: 61 days per 1,000 hours), followed by injuries to cartilage/synovial/bursal tissues (men: 18 days per 1,000 hours; women: 25 days per 1,000 hours).

Injury mechanisms and situations

Injuries most often occurred suddenly during matches. The mode of onset (sudden versus gradual), setting, type of contact and player actions leading to a time-loss injury are shown in Figure 4.

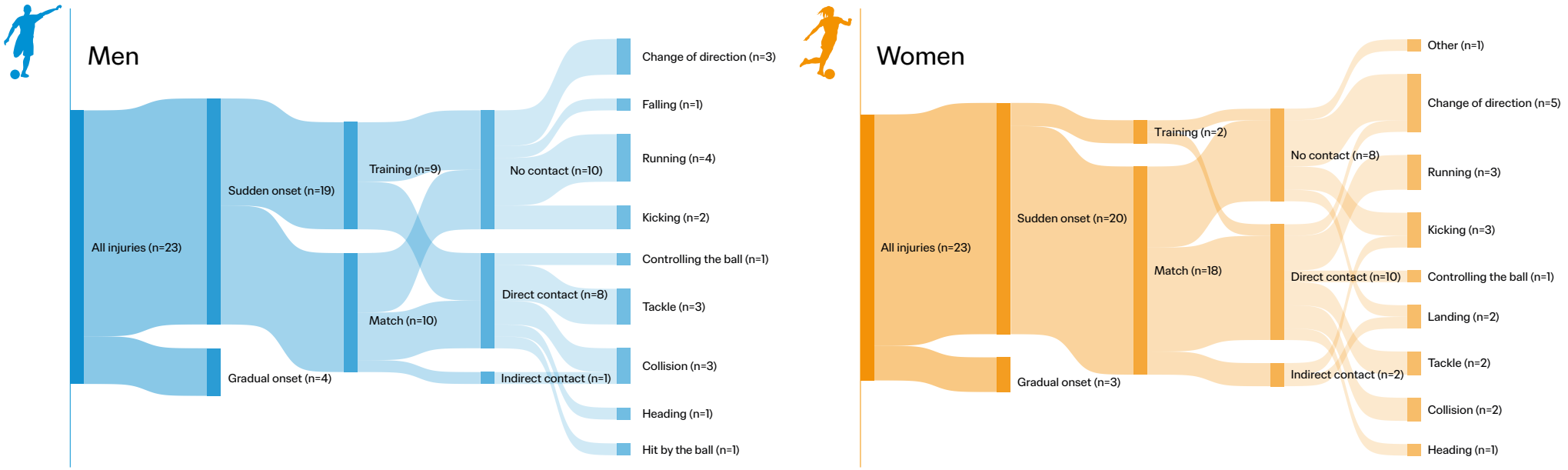

Figure 4. Distribution of time-loss injuries at the Olympic Football Tournaments Paris 2024 by mode of onset, setting, type of contact and player action

Illnesses

	Men	Women
Number of medical-attention illnesses	3	19
Number of players with at least one medical-attention illness	3	17
Incidence rate of medical-attention illnesses	1.1 medical-attention illnesses per 1,000 player-days	5.9 medical-attention illnesses per 1,000 player-days
Number of time-loss illnesses	3	10
Number of players with at least one time-loss illness	3	10
Incidence rate of time-loss illnesses	1.1 time-loss illnesses per 1,000 player-days	3.1 time-loss illnesses per 1,000 player-days
Total time lost due to illness	8 days	33 days
Median time loss per illness	3 days	2.5 days
Time-loss burden of illnesses	2.9 days lost per 1,000 player-days	10.3 days lost per 1,000 player-days

Mental health problems

There were two reported mental health problems during the Olympic Football Tournaments Paris 2024, affecting one male and one female player. One of these resulted in seven days of time loss, while the other did not lead to time loss.

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Potential injury situations

	Men	Women
Number of potential injuries	**464**	**312**
Average number of potential injuries per match (range)	**14.5** (8-30)	**12** (4-22)
Incidence rate of potential injuries	**428** potential injuries per 1,000h	**354** potential injuries per 1,000h
Number of potential injuries that led to on-pitch assessment by team medics (average per match)	**111** (3.5)	**108** (4.2)
Number of potential injuries that directly led to a player being substituted (average per match)	**22** (0.7)	**22** (0.8)
Contact involved in potential injury situations	No contact: **51** (11%) Direct contact: **383** (83%) Unidentifiable: **6** (1%) Indirect contact: **24** (5%)	No contact: **55** (18%) Direct contact: **223** (72%) Unidentifiable: **17** (5%) Indirect contact: **17** (5%)
Most common player actions involved	Receiving a pass: **132** (28%) Aerial duel: **40** (9%) Passing: **32** (7%)	Receiving a pass: **68** (22%) Blocking: **18** (6%) Passing: **15** (5%)
Most common body areas affected	 Head: **75** (16%) Lower leg: **63** (13%) Foot: **103** (22%)	 Head: **46** (15%) Lower leg: **43** (14%) Foot: **48** (15%)
Average duration of medical assessments (range)	**60** seconds (5-164)	**70** seconds (3-289)

Referee actions

	Men	Women
Match stoppages due to potential injuries (average per match)	**312** (9.8)	**173** (7.2)
Free kick or penalty kick awarded to injured player's team	**222** (71% of stoppages)	**85** (49% of stoppages)
Yellow cards shown (average per match)	**50** (1.6)	**14** (0.5)
Red cards shown	**2**	**3**

50

yellow cards were shown following potential injury situations.

This equates to an average of **1.6** per match.

14

yellow cards were shown following potential injury situations.

This equates to an average of **0.5** per match.

Methods

Player health surveillance

All the players from the 12 women's teams (267 players) and the 16 men's teams (351 players) at the Olympic Football Tournaments Paris 2024 were invited to participate in the player health surveillance. Of these, 208 players from the women's tournament (78%) and 189 on the men's side (54%) provided written informed consent and were included in this analysis.

Data was collected using the methodology recommended by the FIFA-led football-specific extension of the IOC consensus statement on methods for recording and reporting of epidemiological data on injury and illness in sport[3]. Injuries were classified in several ways, including by mode of onset (sudden or gradual), injury mechanism, player action, referee sanction, diagnosis, body area and type of tissue affected, pathology type and recurrence. Illnesses were categorised by the organ system affected and the cause, while the expected and actual time required to return to play was factored in for both injuries and illnesses.

Players' health data, as well as their match and training exposure, were collected by each participating team's medical and training personnel from five days prior to their first match until the day of their last match. To improve standardisation and the quality of the data collected, team doctors were informed about the project at their pre-tournament meeting. Additionally, all teams received a study manual describing the project's aims and methods in detail.

Injuries and illnesses were recorded if they occurred during the tournament period and resulted in medical attention. Injuries that led to the player being unavailable for a planned team training session or one or more matches were reported separately. Their severity was measured as the resulting number of days out of action. If players had not returned to full, unrestricted team training and matches at the time when this report was prepared (December 2024), their team doctor's estimate of injury severity was used.

The injury incidence was expressed as the number of new injuries per 1,000 hours of exposure and the time-loss burden as the number of days lost per 1,000 hours of exposure. The illness incidence and burden were respectively expressed as the number of new illnesses and the number of days lost per 1,000 player-days. The injury incidence and burden were reported separately for injuries sustained in training and matches.

Individual demographic information was collected on all participating players, including their age, height, body mass, playing position and leg dominance (preferred kicking leg).

[3] Waldén M, Mountjoy M, McCall A, Serner A, Massey A, Tol JL, Bahr R, D'Hooghe M, Bittencourt N, Della Villa F, Dohi M, Dupont G, Fulcher M, Janse van Rensburg DC, Lu D & Andersen TE. Football-specific extension of the IOC consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport 2020. *British Journal of Sports Medicine*. 2023, 57(21): 1341-1350. Available at: doi.org/10.1136/bjsports-2022-106405.

Analysis of potential match injuries

As the analyses of potential injuries were based on publicly available information, all 506 players who made at least one appearance at the Olympic Football Tournaments Paris 2024 (291 men and 215 women) could be included. Five performance analysts viewed each match remotely using four camera feeds. They all held a master's degree in performance analysis, had been working as analysts for FIFA for more than one year and had undergone comprehensive training. If a player stayed down for more than five seconds and/or requested medical attention during a match, a potential injury situation was recorded and details of the incident were classified using the FIFA Football Language medical coding (Figure 5).

All data was analysed using descriptive statistics. The incidence of potential injury situations was expressed per 1,000 match hours using the following equation: (number of incidents/match exposure time) x 1,000.

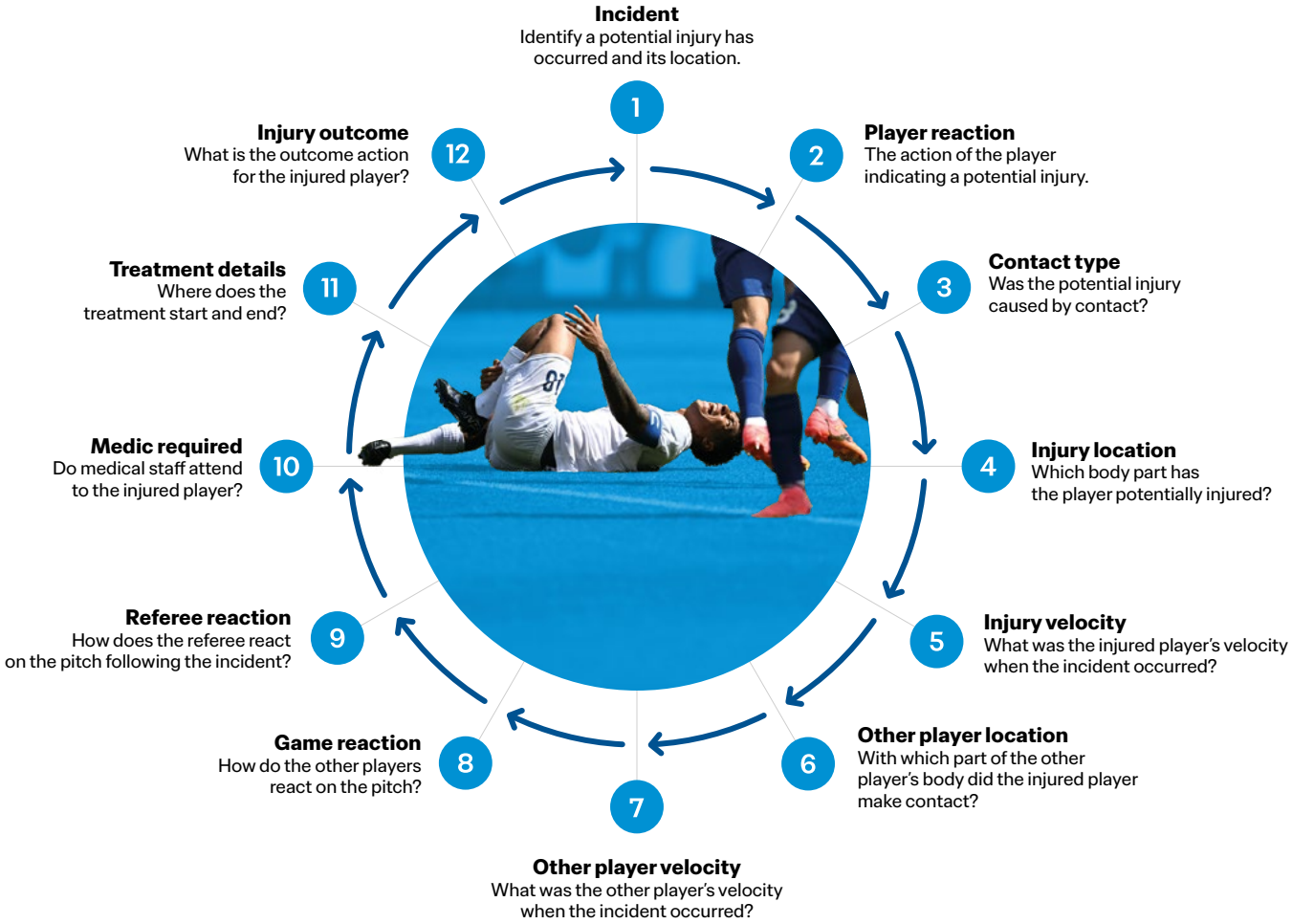

Figure 5. Data collection process for the FIFA Football Language medical coding[4]

[4] Adapted from Aiello F, Avery L, Gardner T, Rutherford H, McCall A, Impellizzeri FM, Peek K, Della Villa F, Massey A & Serner A. Broadening our understanding of injury mechanisms to include at-risk situations: an overview of potential injuries at the FIFA men's World Cup Qatar 2022™. Science and Medicine in Football. 2024: 1-10. Available at: doi.org/10.1080/24733938.2024.2372304.

Definitions

Injury

Tissue damage or other derangement of normal physical function, resulting from the rapid or repetitive transfer of kinetic energy. Injuries may occur to any body tissue, may have a sudden or gradual onset, and may or may not be linked to a clearly identifiable event (such as a tackle or collision).

For the purposes of this report, a recordable injury was any newly sustained injury during the tournament period that led to medical attention.

Potential injury

For the purposes of this report, when a player lay on the pitch for more than five seconds and/or requested medical attention during a match.

Illness

A health-related complaint or disorder experienced by a player, not considered an injury.

For the purposes of this report, a recordable illness was any newly sustained illness during the tournament period that led to medical attention.

Mental health problem

Any adverse thought, feeling, behaviour and/or psychosomatic symptom that reduces a player's normal state of full mental health, irrespective of its cause or its consequences for the player's football participation or performance or whether the athlete seeks medical attention. Mental health problems cover a spectrum, from minor symptoms to severe disorders.

For the purposes of this report, a mental health problem was recordable if it arose during the tournament period and led to medical attention. This does not include routine sport psychology appointments as part of teams' preparations.

Medical attention

Advice, assessment or treatment related to an injury or illness from any medical doctor or other licensed health professional (such as a physical therapist) during the surveillance period. This does not include routine or scheduled interventions delivered by medical personnel for the purpose of physical preparation, recovery or prevention (e.g. massage or taping).

Exposure

Match exposure is defined as organised, scheduled match play between opposing teams (not including internal training matches).

Training exposure is defined as any physical activity performed by players that is aimed at maintaining or improving their skills, physical condition and/or performance in football. The pre-match warm-up and post-match cool-down also count as training exposure. In addition to on-pitch football-specific training, individual training exposure could include strength and conditioning training (e.g. weight training, running or cycling).

Time loss

Time loss is defined as the period during which a player is unable to complete unrestricted team training or participate in a football match.

Severity

Injury and illness severity is measured by the resulting time loss. Severity is recorded as the number of days for which the player is unavailable for unrestricted team training and matches. The time for the return to football is calculated from the date of injury/illness onset (i.e. day 0) until the date when the player returns to full, unrestricted team training or the date of their first partial or full match participation, if this occurs prior to their first complete appearance in team training.

Burden

Burden is a combined measure of the overall consequences of an injury or illness and reflects the frequency (number of cases) and the severity (time loss).

FIFA Medical's initiatives at the tournaments

Player health surveillance was just one of FIFA Medical's initiatives at the Olympic Football Tournaments Paris 2024. A number of others are described here.

Team doctor meeting

Prior to the Olympic Football Tournaments, team doctors from the qualified teams attended an online meeting to discuss FIFA's player health concept at the tournaments.

The meeting consisted of a presentation of the player health concept and an overview of all on-site medical services that were offered during the tournaments in collaboration with Paris 2024 medical representatives.

Taking concussion seriously: "suspect and protect!"

Prior to the tournaments, team doctors were presented with the FIFA Concussion Protocol for Medical Staff, which is based on FIFA's "suspect and protect" philosophy. During the tournaments, a FIFA match doctor oversaw the field-of-play services at each stadium, and for each match, a dedicated injury spotter analysed any relevant medical incidents. The injury spotter used video replay to alert the FIFA match doctor to any signs of a concussion or any other potentially serious injury.

In accordance with Law 3 – The Players, each team had one additional permanent concussion substitution available in each match, irrespective of the number of normal substitutes already used.

www.suspectandprotect.fifa.com
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Mental Health Guidelines for Major Sporting Events

During the tournaments, FIFA worked with the IOC to produce guidelines for the provision of mental health services at major sporting events. This culminated in the IOC developing the Athlete365 Mind Zone, a first-of-its-kind space designed to help athletes relax, recharge and mentally prepare for competition through conversations with trained staff and mindfulness activities.

Emergency preparedness

All field-of-play medical teams were trained in the FIFA set-piece approach prior to the tournaments, and simulations were performed before every match. The FIFA match doctors agreed with the team doctors on the exact role that they wanted to play in the most critical scenarios on the pitch and assigned and documented each medical team member's role in the FIFA Pre-Match Emergency Action Plan.[5]

[5] Patterson M, Gordon J, Boyce SH, Lindsay S, Seow D, Serner A, Thomson K, Jones G & Massey A. Set-piece approach for medical teams managing emergencies in sport: introducing the FIFA Poster for Emergency Action Planning (PEAP). *British Journal of Sports Medicine*. 2022, 56(13): 715-717. Available at: doi.org/10.1136/bjsports-2021-105126.

FIFA's global player health surveillance programme

The aim of FIFA's **global player health surveillance programme** is for all decision makers in football to have an up-to-date overview of the magnitude and determinants of all major health challenges in football globally. Achieving this requires a coordinated effort from many organisations, such as FIFA's member associations, the six confederations, and leagues and clubs worldwide.

Through a range of strategies and projects, FIFA plays a leading role in implementing player health surveillance in football, standardising and innovating surveillance methodology and conducting surveillance-related research (Figure 6).

For more information on this programme, please email medical@fifa.org.

Figure 6. Strategies and projects within FIFA's global player health surveillance programme

Report information

This report was prepared by FIFA Medical.

No relationship is implied between images of players in this report and the report's content.

FIFA Medical appreciates the valuable contribution of team medical staff at the Olympic Football Tournaments, including Brandi Cole (Australia), Lygia Alves Neder (Brazil), Lee Schofield (Canada), Carlos Bethoveen Terrero Zabala (Dominican Republic), Emmanuel Zaccheo (France), Vincent Detaille (France), Carsten Lueg (Germany), Michel Gaillaud (Guinea), Yamaguchi Nami (Japan), Shuji Taketomi (Japan), Mohamed Rida Bilal (Morocco), Simon Kim (New Zealand), Colleen Winstanley (New Zealand), Larai Hyedima Garba (Nigeria), Derlis Daniel Acosta Quiñonez (Paraguay), Salvador Castillo Dorador (Spain), José Antonio Rodas Pereira (Spain), Maksym Betsko (Ukraine), Ivan Pierra (USA), Monica Rho (USA), Juliet Barnes (USA) and Faith Tiza Chibeza (Zambia).

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The Olympic Football Tournaments Paris 2024 Player Health Surveillance Study was approved by the Swiss Association of Research Ethics Committees (BASEC number: 2023-00772). Player information and informed consent forms were available in English, French and Spanish. All the players included in the analyses provided written consent to the use of their data for research purposes.

This report will be updated following scientific peer review and publication of the results. The content will be discussed in separate peer-reviewed scientific publications.

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