Update VBG-Sportreport

Detailanalysen (Hot-Spots im Geschlechtervergleich) im Fokus

Hendrik Bloch
VBG-Sportreferent

Präventionssymposium Fußball

Samstag, 6. September 2025

BORUSSIA-PARK | Hennes-Weisweiler-Allee 1 | 41179 Mönchengladbach

VBG Sportreport – 2016
Analyse des Unfallgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball & Handball

VBG-Sportreport 2017
Analyse des Unfallgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball und Handball

VBG-Sportreport 2018
Analyse des Unfallgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball und Handball

VBG-Sportreport 2019
Analyse des Unfallgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball, Handball
Eine Längsschnittbetrachtung drei aufeinanderfolgender Saisons

VBG-Sportreport 2020
Analyse des Unfallgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball, Handball
Christian Klein, Sportreferent der VBG

VBG-Sportreport 2021
Analyse des Verletzungsgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball, Handball

VBG-Sportreport 2024
Analyse des Verletzungsgeschehens in den zwei höchsten Ligen der Männer: Basketball, Eishockey, Fußball und Handball

RESEARCH ARTICLE   Open Access

Collision with opponents—but not foul play—dominates injury mechanism in professional men's basketball

Leonard Achenbach[1*], Christian Klein[3], Patrick Luig[3], Hendrik Bloch[3], Dominik Schneider[4] and Kai Fehske[2]

Original research

Contact — but not foul play — dominates injury mechanisms in men's professional handball: a video match analysis of 580 injuries

Patrick Luig,[1] Werner Krutsch,[2] Thomas Henke,[3] Christian Klein[1] Hendrik Bloch,[1] Petra Platen,[4] Leonard Achenbach[5]

Original research

Nine typical injury patterns in German professional male football (soccer): a systematic visual video analysis of 345 match injuries

Christian Klein[1,2] Patrick Luig,[1,2,3] Thomas Henke,[1] Hendrik Bloch,[2] Petra Platen[1]

Original research

Hamstring injury patterns in professional male football (soccer): a systematic video analysis of 52 cases

Thomas Gronwald[1] Christian Klein[2] Tim Hoenig[3] Micha Pietzonka[2] Hendrik Bloch[2] Pascal Edouard[4,5] Karsten Hollander[1]

Original research

OPEN ACCESS

Four distinct patterns of anterior cruciate ligament injury in women's professional football (soccer): a systematic video analysis of 37 match injuries

Leonard Achenbach[1] Hendrik Bloch[2] Christian Klein[2] Theresa Damm,[3] Matthias Obinger,[4] Maximilian Rudert,[1] Werner Krutsch,[5,6] Dominik Szymski[5]

Verletzungsmonitoring – Der VBG-Sportreport

1./2. Bundesliga Männer Basketball, Eishockey, Fußball & Handball

- Epidemiologische Betrachtung der beiden höchsten Männerligen im BB, EH, FB und HB (~ 3.000 Spieler, ~ 6.000 Verletzungen)

- Gesamt-AU von ca. 87.000 Tage (≈240 Jahre)

- Ätiologische Beschreibung von Unfallhergängen (>1.300 videoanalysierte Verletzungsszenen)

- Identifizierung typischer Verletzungsmuster in allen 4 Sportarten

- → **Weltweit eine der größten Verletzungs-Studien aus dem Profi-Sport**

4.515

Verletzungen
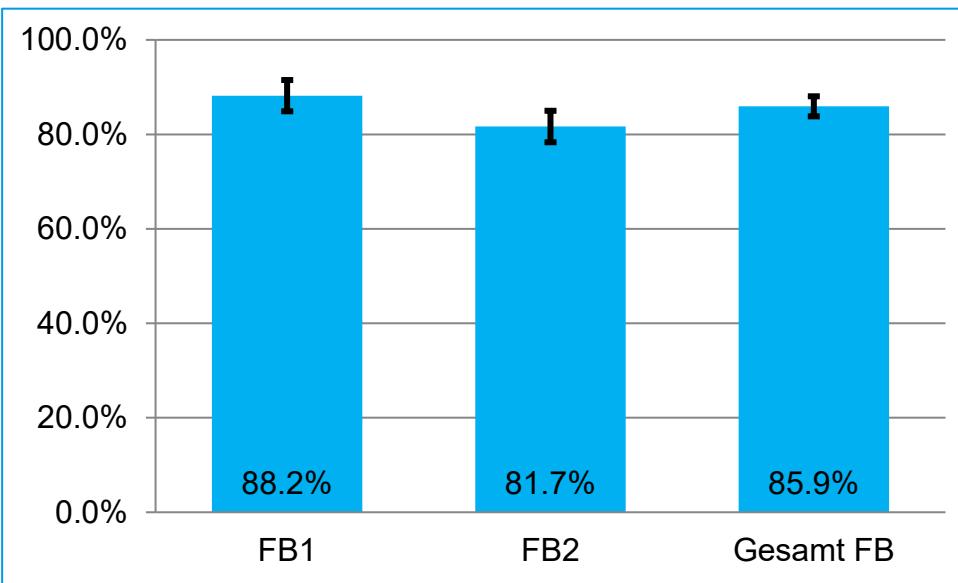
64.901

Ausfalltage
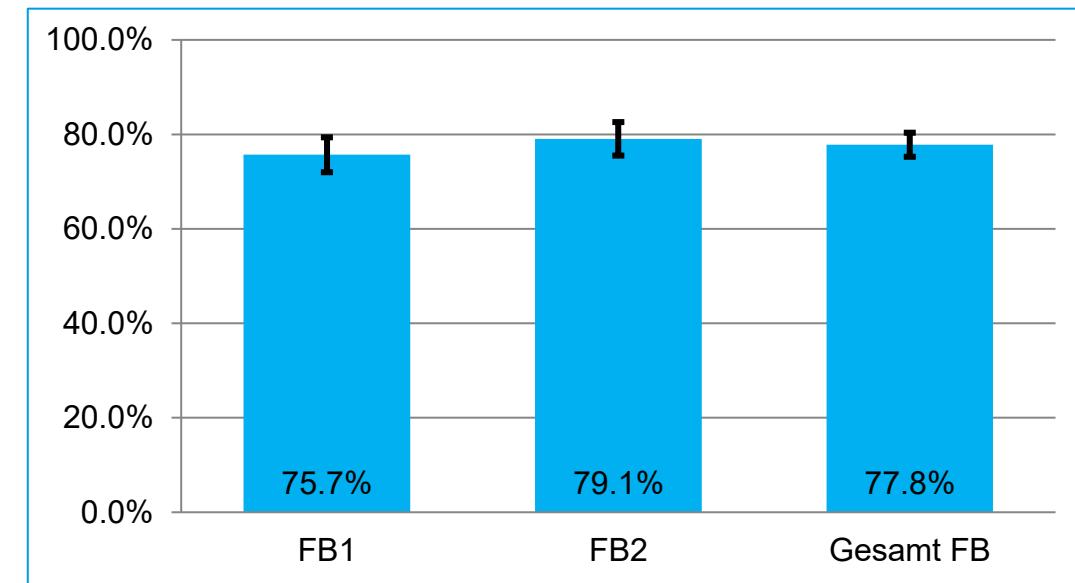
Prävalenz nach Liga

Anteil (%) verletzter Spieler in den Saisons 2021/22 und 2022/23 [± 95 % Konfidenzintervall]
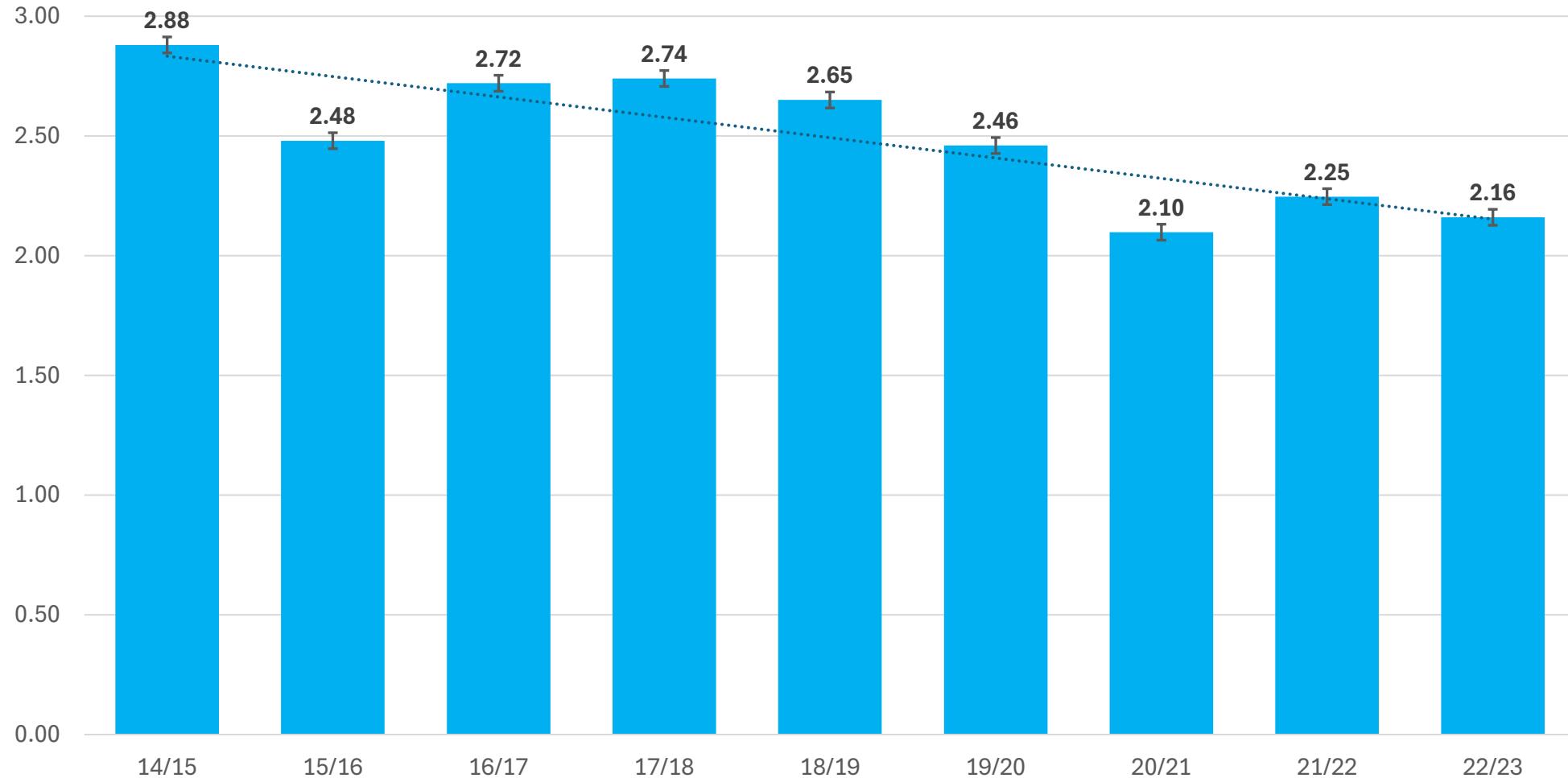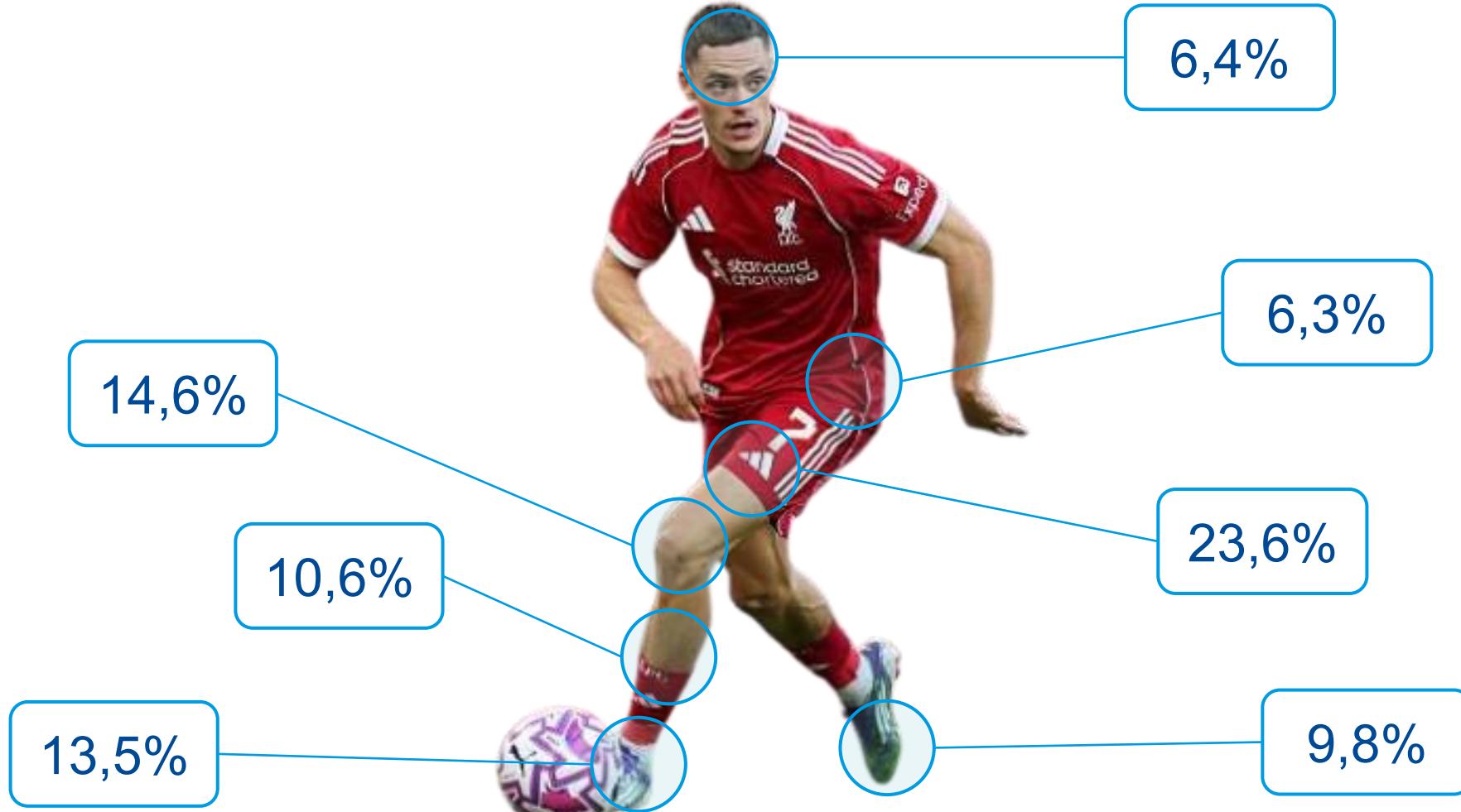
Kumulative Saisoninzidenzen im Längsschnitt

Längsschnittbetrachtung über neun aufeinanderfolgende Saisons (n = 21.469 Verletzungen; ± 95 % KI)
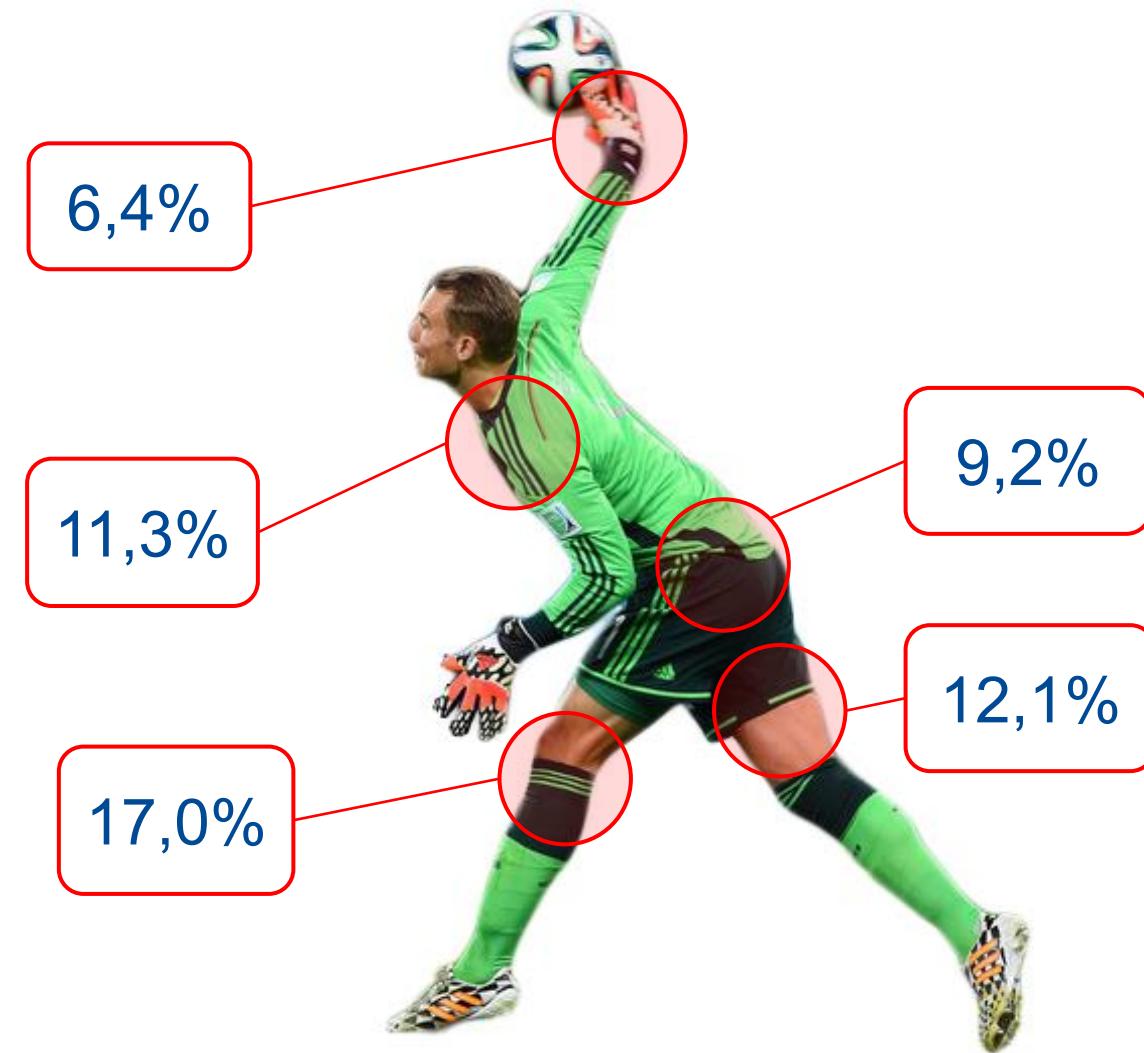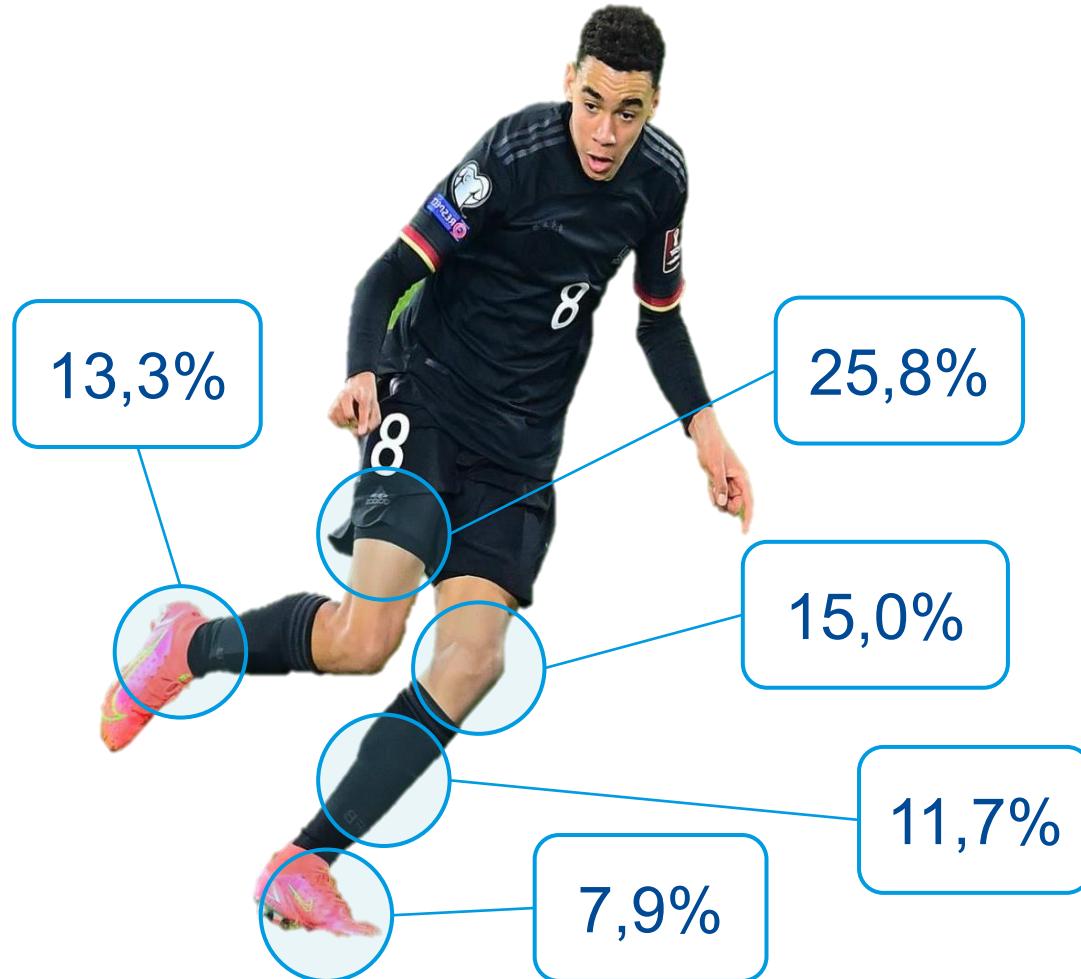
Verletzte Körperregionen

Bundesliga und 2. Bundesliga 2014 - 2023, n = 21.469 Verletzungen

6,4%

6,3%

14,6%

10,6%

23,6%

13,5%

9,8%
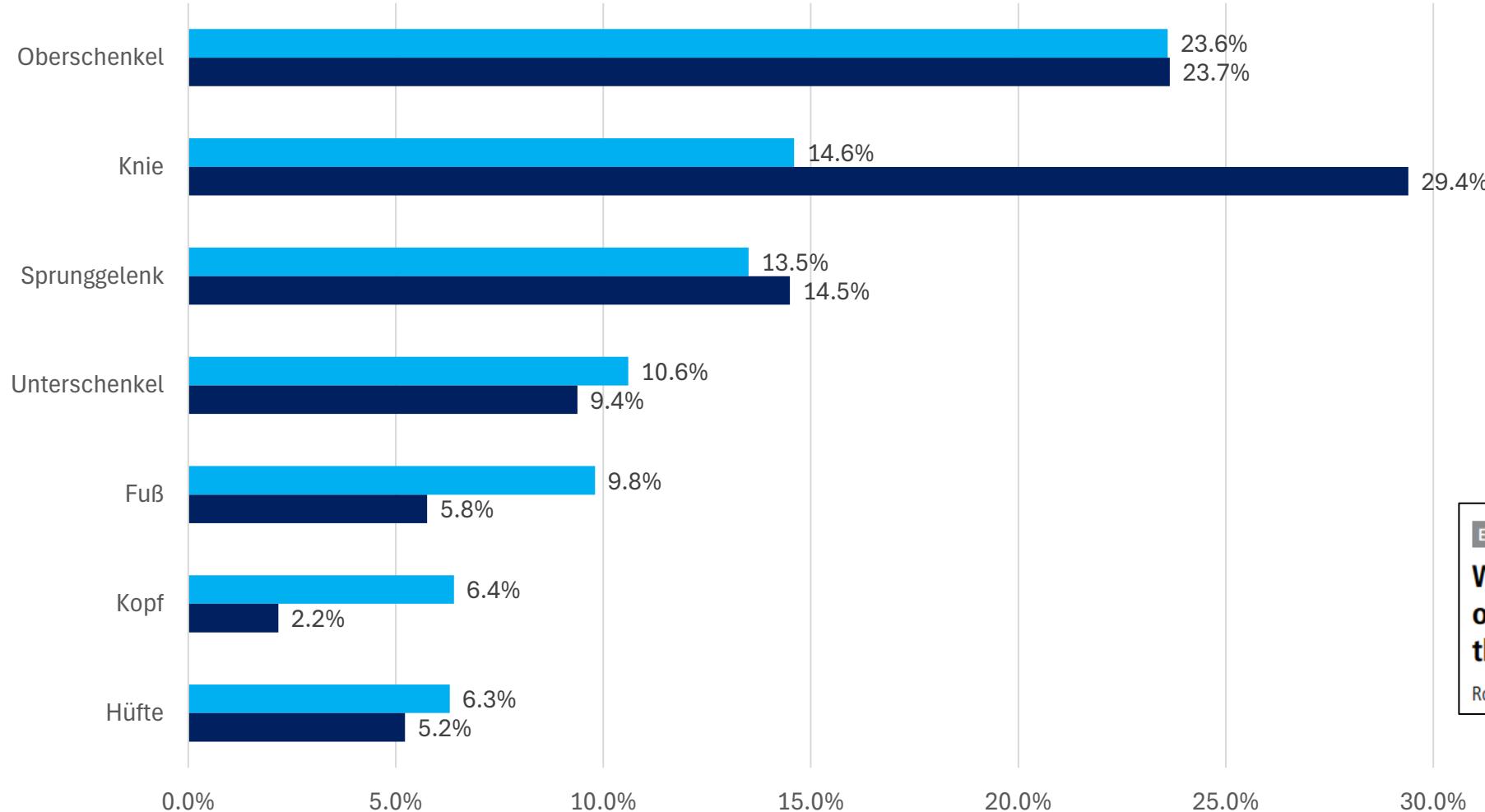
Verletzte Körperregionen im Fußball – Feldspieler vs. Torwart

VBG-Sportreport 2021, n = 2.435 Verletzungen

13,3%

25,8%

15,0%

11,7%

7,9%

6,4%

11,3%

9,2%

12,1%

17,0%

Verletzte Körperregionen und Ausfallzeiten

Bundesliga und 2. Bundesliga 2014 - 2023, n = 21.469 Verletzungen

Oberschenkel
- 23.6% (Anzahl)
- 23.7% (Burden)

Knie
- 14.6% (Anzahl)
- 29.4% (Burden)

Sprunggelenk
- 13.5% (Anzahl)
- 14.5% (Burden)

Unterschenkel
- 10.6% (Anzahl)
- 9.4% (Burden)

Fuß
- 9.8% (Anzahl)
- 5.8% (Burden)

Kopf
- 6.4% (Anzahl)
- 2.2% (Burden)

Hüfte
- 6.3% (Anzahl)
- 5.2% (Burden)

Legende: ■ Anzahl ■ Burden

X-Achse: 0.0% 5.0% 10.0% 15.0% 20.0% 25.0% 30.0%

Editorial

Why we should focus on the burden of injuries and illnesses, not just their incidence

Roald Bahr,[1,2] Benjamin Clarsen,[1] Jan Ekstrand[3]

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Präventionssymposium Fußball | BORUSSIA-PARK | Hendrik Bloch

Verletzungen im deutschen Frauenfußball

Analyse des Verletzungsgeschehens der Frauen-Bundesliga und 2. Frauen-Bundesliga in der Saison 2023/24

- **21** Mannschaften

- **551** Spielerinnen

  - FFB1: 227 Spielerinnen

  - FFB2: 269 Spielerinnen

- **362** Verletzungen

- **11.877** Ausfalltage

Bayern München (M)	Hamburger SV (N)
VfL Wolfsburg (P)	1. FFC Turbine Potsdam (A)
Eintracht Frankfurt	SC Sand
TSG Hoffenheim	SV Meppen (A)
SGS Essen	Carl Zeiss Jena
Werder Bremen	FC Ingolstadt 04
Bayer 04 Leverkusen	SG Andernach
SC Freiburg	FSV Gütersloh 2009
1. FC Köln	Eintracht Frankfurt II
RB Leipzig (N)	SV Weinberg (N)
1. FC Nürnberg (N)	Bor. Mönchengladbach (N)
MSV Duisburg	Bayern München II
	TSG Hoffenheim II
	VfL Wolfsburg II
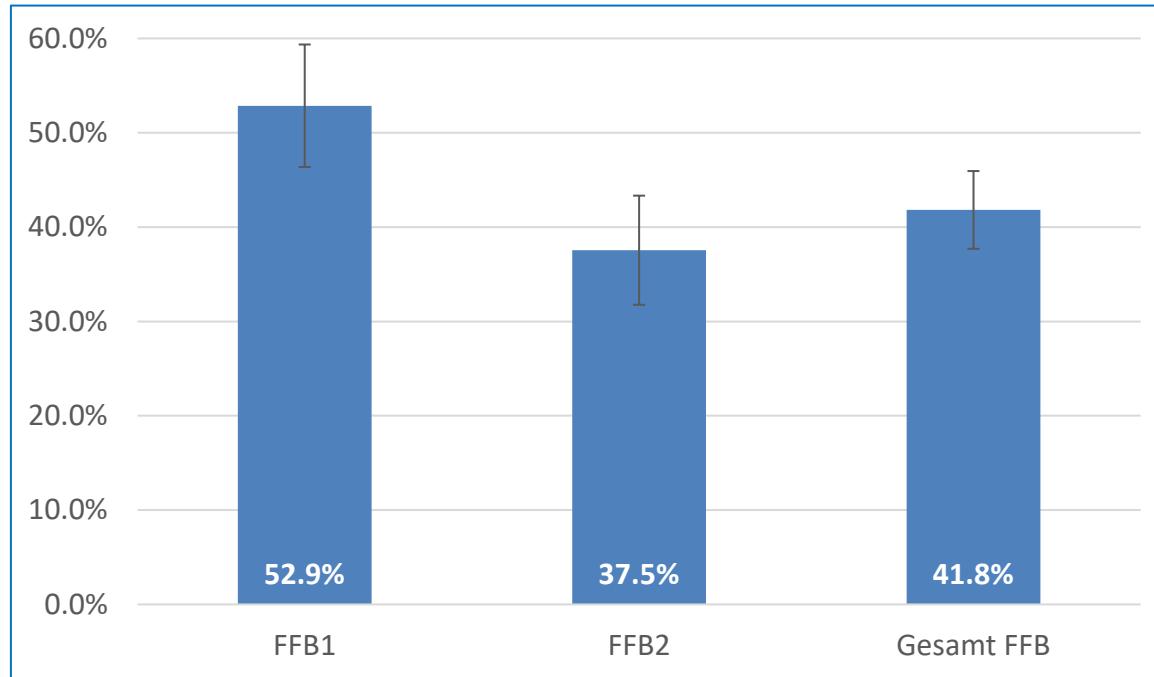
Huber et al. 2025
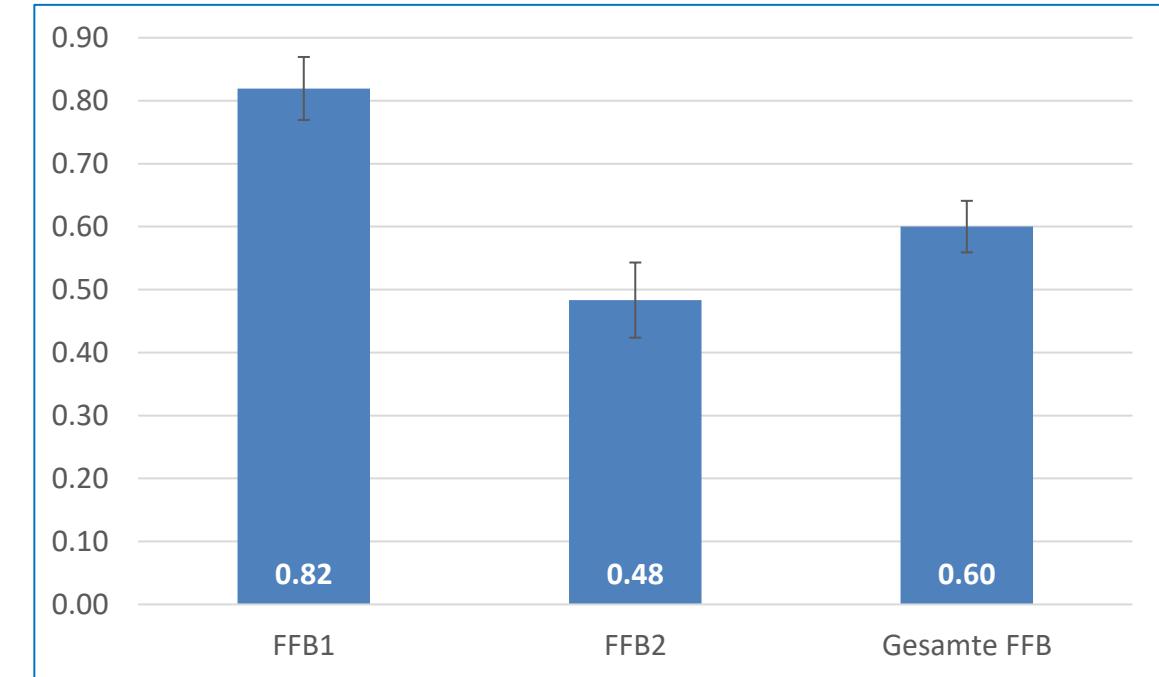
Prävalenz und kumulative Saisoninzidenzen nach Liga

Anteil (%) verletzter Spielerinnen und Anzahl Verletzungen pro Spielerin in der Saison 2023/24 [± 95 % Konfidenzintervall]

78% der Spielerinnen

1,5 Verletzungen pro Spielerin

Original research

OPEN ACCESS

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

Anna Hallén [1,2] Rita Tomás,[3,4] Jan Ekstrand [1,5] Håkan Bengtsson [1,5] Elke Van den Steen,[6] Martin Hägglund [1,2] Markus Waldén [1,5]

Huber et al. 2025, Hallen et al. 2024

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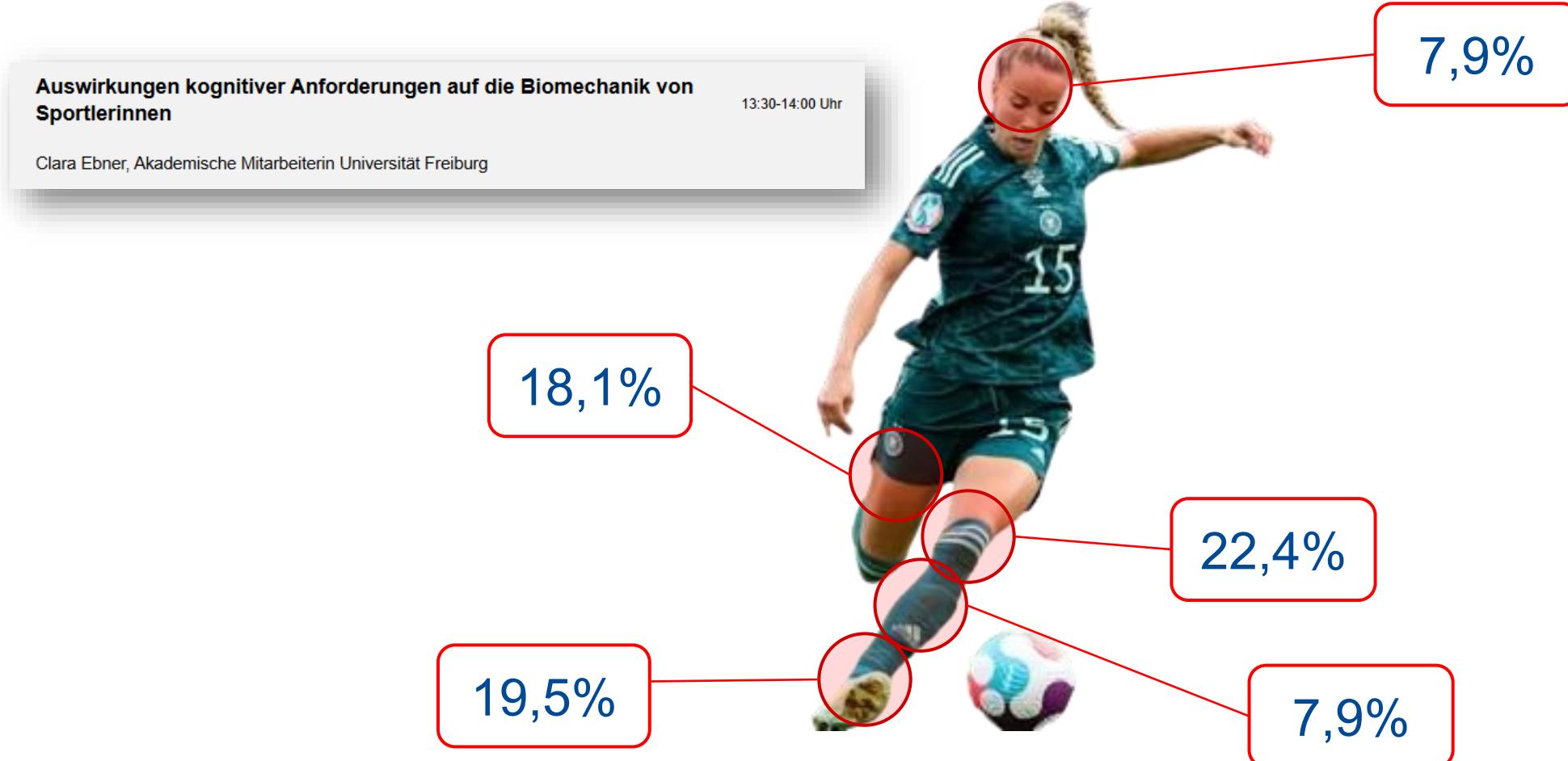
Verletzte Körperregionen

Anteil (%) am Verletzungsgeschehen in der Saison 2023/24 der Frauen-Bundesliga und 2. Frauen-Bundesliga

Auswirkungen kognitiver Anforderungen auf die Biomechanik von Sportlerinnen

13:30-14:00 Uhr

Clara Ebner, Akademische Mitarbeiterin Universität Freiburg

7,9%

18,1%

22,4%

19,5%

7,9%

Huber et al. 2025

Verletzte Körperregionen

Anteil (%) am Verletzungsgeschehen in den Saisons 2018/19 bis 2021/22 der UEFA Women´s Champions League

Original research
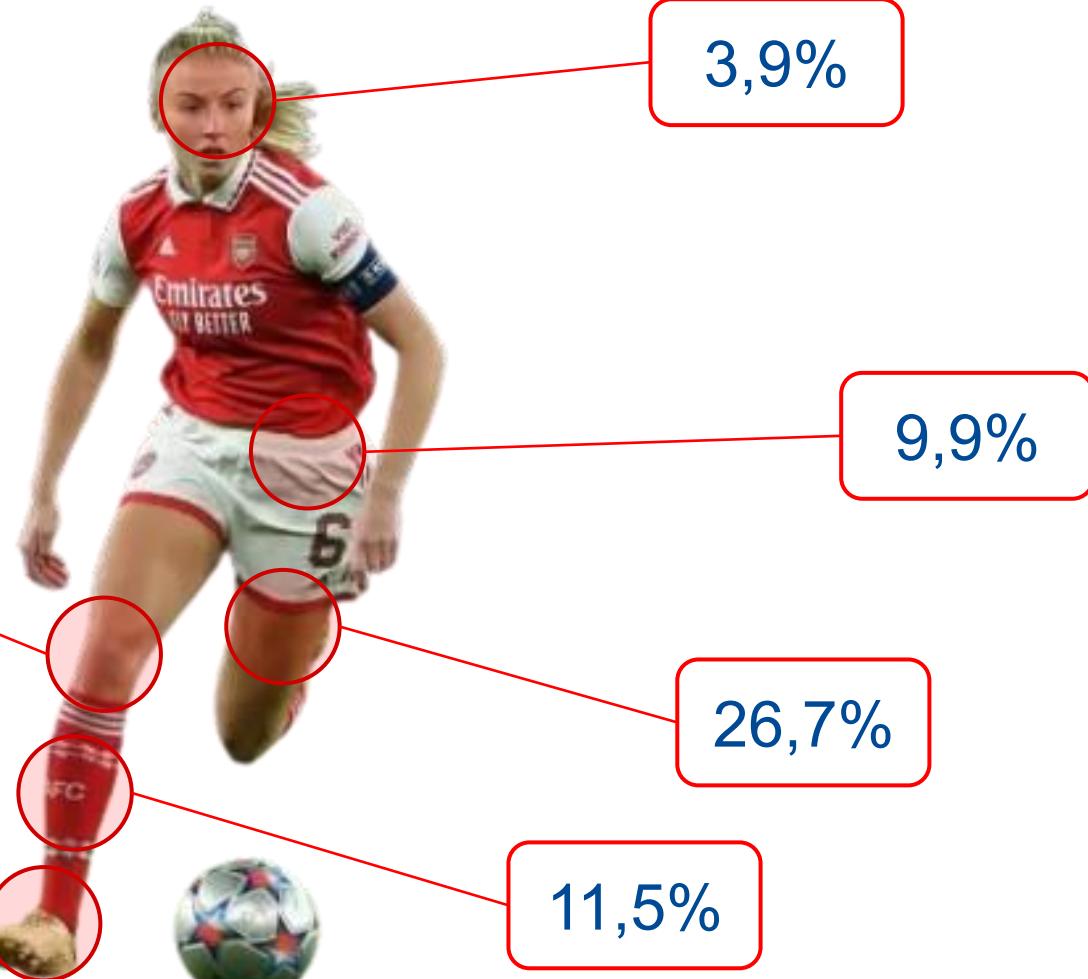
OPEN ACCESS

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

Anna Hallén [1,2] Rita Tomás,[3,4] Jan Ekstrand [1,5] Håkan Bengtsson [1,5] Elke Van den Steen,[6] Martin Hägglund [1,2] Markus Waldén [1,5]

3,9%

9,9%

17,7%

26,7%

13,7%

11,5%

Hallen et al. 2024

VBG

Ausfallzeiten der häufigsten Verletzungsarten

Frauen-Bundesliga und 2. Frauen-Bundesliga 2023/24, n = 362 Verletzungen, Ausfallzeiten in Tagen

Verletzungsart	Mittelwert (± SD)	Median	Min.	Max.
VKB-Ruptur	392,8 ± 179,8	322,0	222,0	786,0
Meniskusruptur	305,3 ± 420,4	124,0	6,0	786,0
Kollateralbandruptur Knie	101,6 ± 107,0	64,0	39,0	317,0
Muskelbündelriss	42,1 ± 10,3	44,0	24,0	57,0
Muskelfaserriss	32,5 ± 19,1	31,0	8,0	81,0
Muskelzerrung	16,1 ± 17,3	10,0	4,0	90,0
Kollateralbandruptur Sprunggelenk	31,6 ± 33,3	30,0	2,0	109,0
Gehirnerschütterung	12,7 ± 9,2	9,0	3,0	30,0

Huber et al. 2025

Hot-Spot Vordere Kreuzbandruptur

Francesco Della Villa, MD[†,*], Håkan Bengtsson, PT[‡,§], Martin Hägglund, PT, PhD [iD] [‡,∥], Romain Seil, MD [iD] [¶], Eric Hamrin Senorski, PT, PhD [iD] [#,**], Jan Ekstrand, MD, PhD[‡,§], and Markus Waldén, MD, PhD [iD] [‡,§]

Players with ACLR had **a 60% higher thigh muscle injury incidence** (RR, 1.6 [95% CI, 1.3-2.0]) within 2 years after RTP **compared with players without ACL injuries**.

Players with ACLR had **a doubled thigh muscle injury incidence** (RR, 2.0 [95% CI, 1.4-2.9]) in the 2 years after RTP **compared with 2 years before their ACL injury.**

Einsatz der funktionellen Diagnostik zur Belastungsfreigabe   13:00-13:30 Uhr

Dr. Hauke Dewitz und Dr. Burak Yildirim, ORTHO SPORTS LAB Pulheim

Della Villa et al. 2025

Ärztliche Diagnostik, Therapie und Rehabilitation von Muskelverletzungen im Profi-Fußball
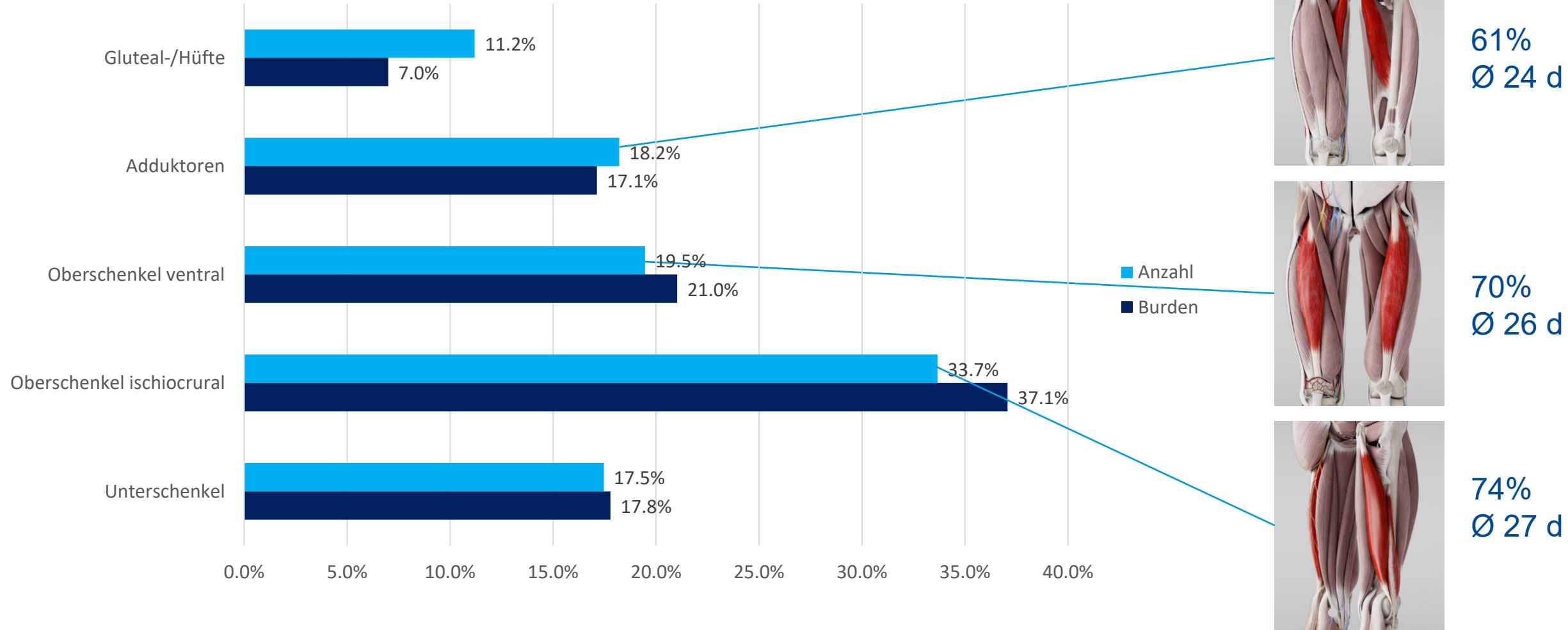
09:45-10:15 Uhr

Dr. Ralf Doyscher, Orthopädie Zentrum Theresie München

Hot-Spot-Muskelverletzungen

Muskelverletzungen nach betroffenen Muskelgruppen

Anteil (%) Verletzungen und Arbeitsunfähigkeit, Saisons 2021/22 und 2022/23, n = 1.197 Verletzungen

Gluteal-/Hüfte
- 11.2%
- 7.0%

Adduktoren
- 18.2%
- 17.1%

Oberschenkel ventral
- 19.5%
- 21.0%

Oberschenkel ischiocrural
- 33.7%
- 37.1%

Unterschenkel
- 17.5%
- 17.8%

Legende:
- ■ Anzahl
- ■ Burden

0.0% 5.0% 10.0% 15.0% 20.0% 25.0% 30.0% 35.0% 40.0%

61%
Ø 24 d

70%
Ø 26 d

74%
Ø 27 d
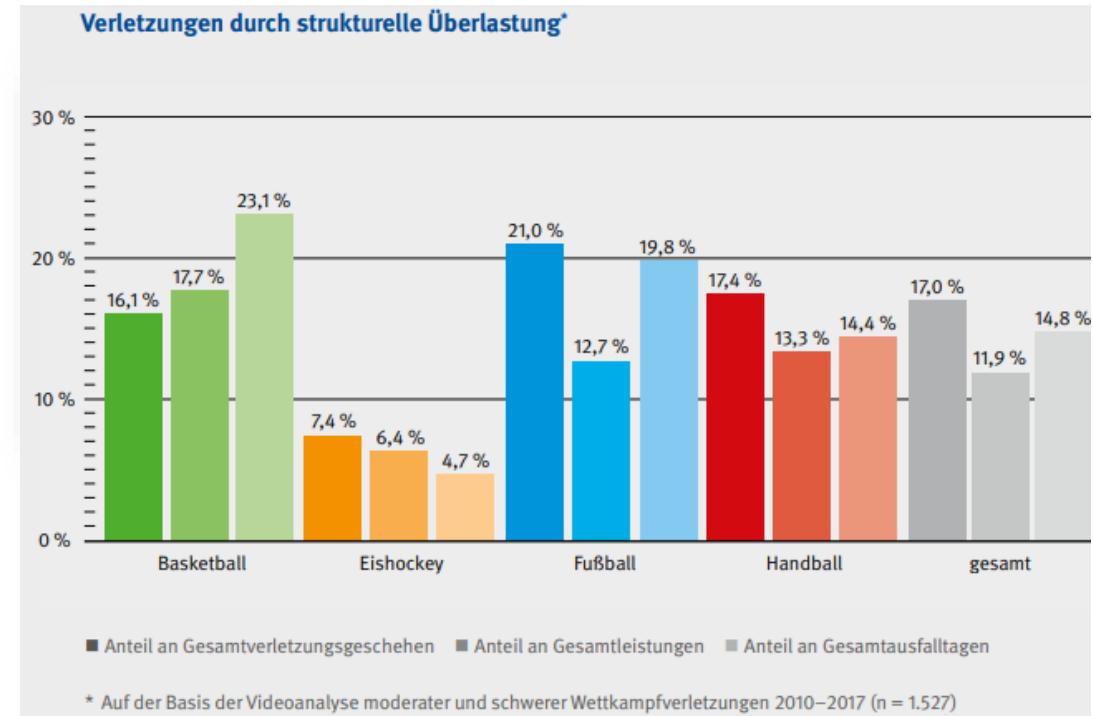
Muskelverletzungen im Frauenfußball
Deutschland vs. UEFA Women´s Champions League

VERLETZUNGS- UND ERKRANKUNGSREGISTER IM DEUTSCHEN FRAUENFUSSBALL

Dr. med. Lorenz Huber
Klinik für Unfallchirurgie, Universitätsklinikum Regensburg, Direktor Prof. Dr. Dr. Volker Alt

Verletzungen durch strukturelle Überlastung*

■ Anteil an Gesamtverletzungsgeschehen   ■ Anteil an Gesamtleistungen   ■ Anteil an Gesamtausfalltagen

* Auf der Basis der Videoanalyse moderater und schwerer Wettkampfverletzungen 2010–2017 (n = 1.527)

- 24% aller Verletzungen
- 29% Quadrizeps
- 22% Hamstrings

- 43,5% Overuse

Monitoring im Profifußball – mögliche Strategien & Konsequenzen   10:15-10:45 Uhr

Alexander Mouhcine, Head of Performance Borussia Mönchengladbach

Regenerationschance Atmung   14:30-15:00 Uhr

Thorsten Ribbecke, Leiter DOSB Athletiktrainerausbildung

Wie entstehen Verletzungen der Hamstrings?

HAMSTRING INJURY PATTERNS IN FOOTBALL

BJSM APPROVED
QUALITY INTERNATIONAL EDUCATION

Reference: Gronwald et al. BJSM 2022   Designed by @YLMSportScience and @G_Ron_Woods

52 cases of acute non-contact and indirect contact match hamstring injuries of the two highest divisions in German male football were analyzed (ie, time loss of >7 days).

RESULTS

Stretch-related hamstring injuries
Braking or stopping
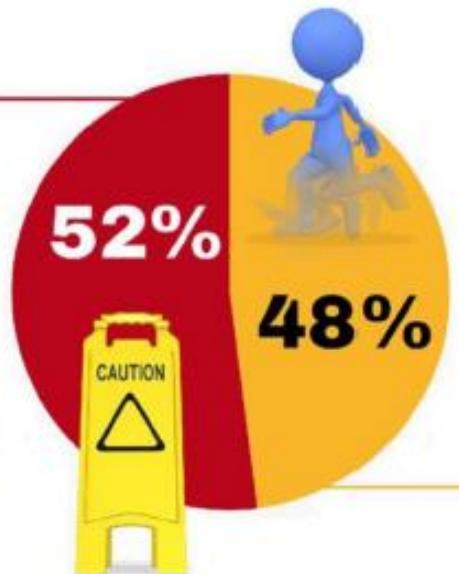
Lunging (59%)

Kicking (30%)

Landing (7%)

Images provided by PresenterMedia

52%

48%

Sprint-related hamstring injuries
Acceleration phase (56%) and high-speed running phase (40%)

CAUTION

The kinematic analysis of stretch-related injuries revealed a change of movement involving knee flexion to knee extension and a knee angle of <45° when the injury occured in all closed and open chain movements.

Biceps femoris was the most affected muscle (79%) of all included cases.

Hamstring injury patterns in professional male football (soccer): a systematic video analysis of 52 cases

Thomas Gronwald [1] Christian Klein [2] Tim Hoenig [3] Micha Pietzonka [2] Hendrik Bloch [2] Pascal Edouard [4,5] Karsten Hollander [1]

What are the findings?

► The three typical reported injury patterns for hamstring injuries were (1) sprint-related injuries, (2) stretch-related closed-chain injuries while lunging and (3) stretch-related open-chain injuries while kicking.

► All sprint-related hamstring injuries occurred during linear acceleration and high-speed running phases.

► All stretch-related hamstring injuries were characterised by a change of movement from knee flexion to knee extension with a knee angle of <45° at the assumed injury frame.

Gronwald & Klein et al. 2022

Injury-inciting circumstances of sudden-onset hamstring injuries: video analyses of 63 match injuries in male professional football players in the Qatar Stars League (2013–2020)

Robin Vermeulen [1,2] Nicol van Dyk [1,3,4] Rod Whiteley [1], Karim Chamari [1,5] Warren Gregson [6,7] Lorenzo Lolli [6,7] Roald Bahr [1,8] Johannes L Tol, [1,2] Andreas Serner [1,9]

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY
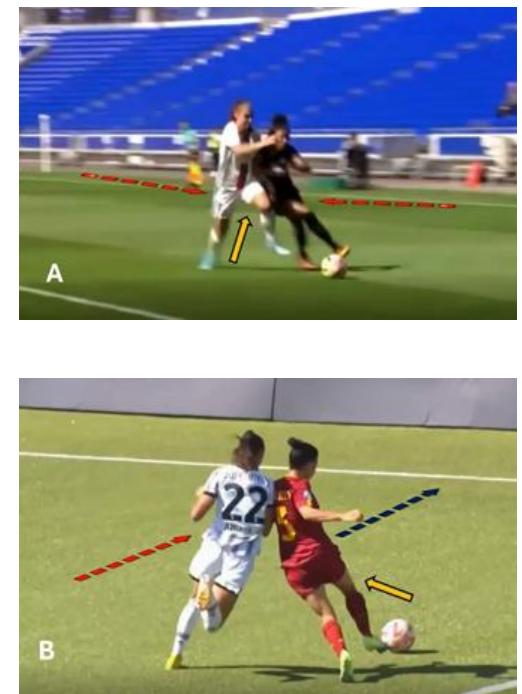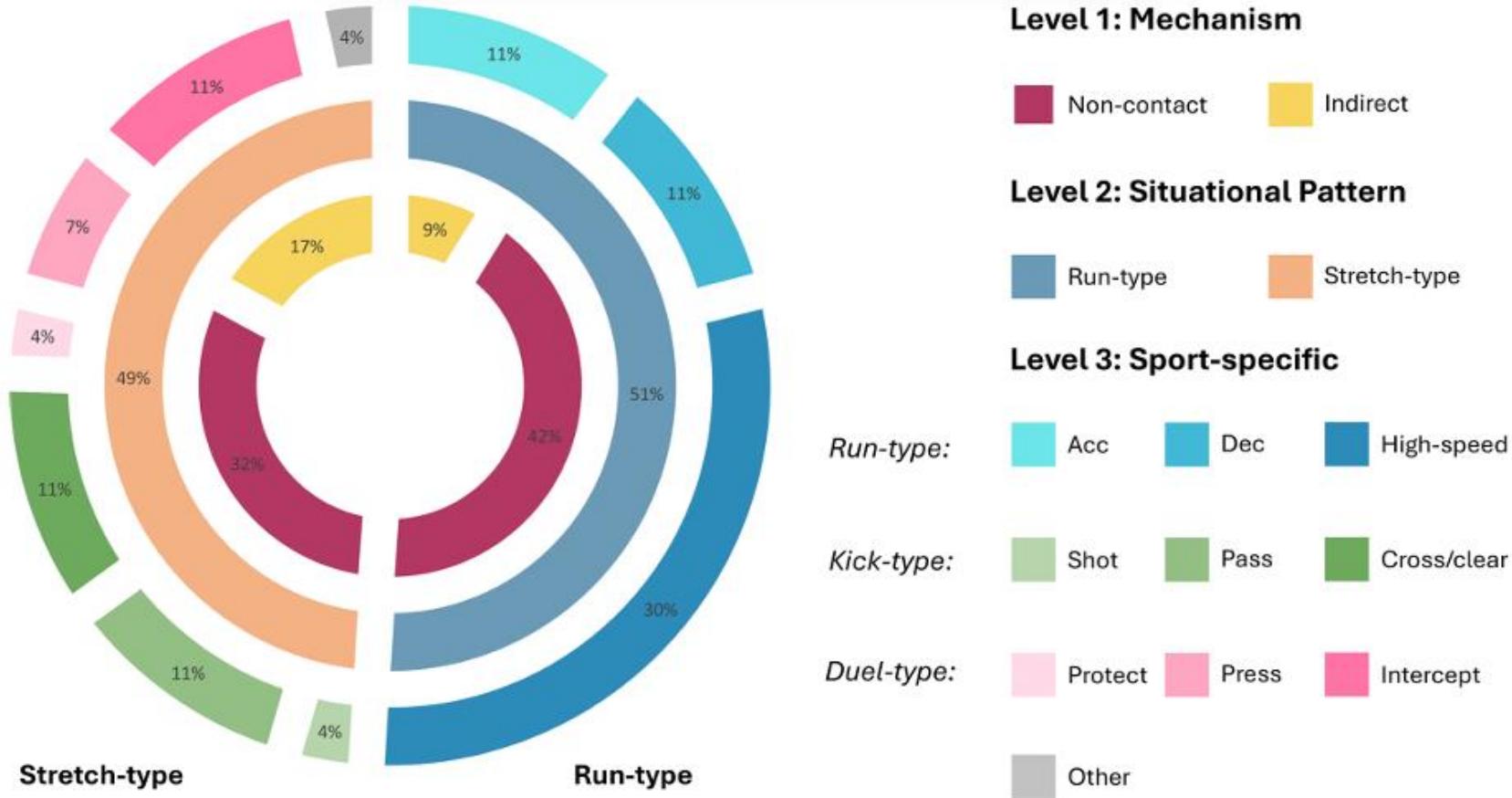
⇒ Research and application of prevention and rehabilitation strategies may need to consider injury mechanisms beyond high-speed running, especially short accelerations.

⇒ The complexity of movements inherent in sport such as football is highlighted as a potential risk factor for injury.

⇒ Introducing sport-specific elements, such as playing situations, indirect contact and unexpected changes to demands for performance may benefit injury prevention programmes in the future.

Table 2 Player action(s) in 63 sudden-onset hamstring injuries

|	N	% of category	% of all injuries
Running (linear) (n=41, 66%)			
Acceleration	24	59%	38%
At speed	10	24%	16%
Deceleration	2	5%	3%
Unclear	5	12%	8%
Running (curved) (n=13, 21%)			
Acceleration	7	54%	11%
At speed	2	15%	3%
Deceleration	2	15%	3%
Unclear	2	15%	3%
Turning from injured leg	6	46%	10%
Turning towards injured leg	7	54%	11%
Unclear	0	0%	0%
Running speed (n=54, 86%)			
Fast	18	33%	29%
Moderate	33	61%	52%
Slow	2	4%	3%
Unclear	1	2%	2%
Running distance (in metres) (n=54, 86%)			
0–10	24	44%	38%
10–20	8	15%	13%
20–30	14	26%	22%
30–40	5	9%	8%
40–50	2	4%	3%
>50	1	2%	2%

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Figure 3 Classification of hamstring injury mechanisms (level 1, inner circle), situational patterns (level 2, middle circle) and sport-specific for football (level 3, outer circle).

HIP

Knee Surgery, Sports Traumatology, Arthroscopy WILEY

A comparative video analysis of hamstring injuries mechanism and situational pattern in men's and women's football (soccer)

Francesco Della Villa[1] | Matthew Buckthorpe[1,2] | Alessandro Pellegrini[3] | Alice Ranzini[3] | Fabio Esposito[3] | Christian Crescenzo[1] | Gianni Nanni[4] | Matteo Zago[3]

FIGURE 1 Bar charts with normalised proportions for female (black) and male (white) players: injury mechanism (left), situational pattern (right).

FIGURE 3 Top, seasonal distribution. Bottom: time distribution during the match for female (left) and male (right) players. Black (grey) dashed lines indicate the linear trend of women's (men's) injuries.

Della Villa et al. 2024

VBG

Präventionssymposium Fußball | BORUSSIA-PARK | Hendrik Bloch

Wie entstehen Verletzungen der ventralen Oberschenkelmuskulatur?

Table 1: Illustration of three typical injury patterns for moderate and severe anterior thigh muscle injuries in professional male football

Injury Pattern	Prior injury scene	Assumed injury scene	Post injury scene
1) Non-contact pattern: Player in bright color sustains injury while kicking			
2) Indirect-contact pattern: Player #26 sustains injury while sprinting duel with opponent			
3) Contact pattern: Player in stripes sustains injury while attacking from a knee-to-thigh collision with opponent			

VIDEO ANALYSIS OF ANTERIOR THIGH MUSCLE INJURIES IN GERMAN MALE FOOTBALL

KLEIN C

Wie entstehen Verletzungen des M. adductor longus?

What are the findings?

► Acute adductor longus injury situations vary greatly. Player actions can be categorised into change of direction, kicking, reaching and jumping.

► Kicking and jumping injury actions follow an open chain movement, typically involving a rapid change of movement from hip extension to hip flexion, and hip abduction to adduction, with the hip externally rotated.

► Change of direction and reaching injury actions follow a closed chain movement, typically involving a combination of hip extension and hip abduction of the injured leg with the hip externally rotated.

Figure 2 Examples of the four categories of player actions at the time of injury: (A) change of direction, (B) kicking, (C) reaching, (D) jumping. These four players injured their right adductor longus.

Take home!

#Injury Hot-Spots

Knie, Oberschenkel und Sprunggelenk im Fokus! Geschlechts- und positionsspezifische Unterschiede.

#Hot-Spot Concussion

♀ >♂, RTP-Guidelines ♀ >♂

#Hot-Spot vorderes Kreuzband

Ansteigender Trend, spätere operative Versorgung und längere Ausfallzeiten bei Frauen, ♀ ♂ >30% Second-Injury-Rate

#Hot-Spot Muskelverletzungen

wiederkehrende Verletzungsmuster → Prävention & Rehabilitation muss auf die Anforderungen des Spiels vorbereiten.

#Verletzungs-Monitoring

Betrachtung des Verletzungsgeschehens im eigenen Setting nötig.