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8 Match injuries in professional soccer: inter-seasonal variation and effects of competition
9 type, match congestion and positional role

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26 Running head: Injury in professional soccer

1 Abstract

2 In this prospective observational study, injuries sustained in official match-play in
3 players belonging to a professional soccer club were investigated. Incidence and
4 patterns of injury were compared across four-seasons (2005-2006: S1, 2006-2007: S2,
5 2007-2008: S3 and 2008-2009: S4) and 3 match formats (domestic League/Cup games
6 and European club competition). In addition, the effects of both fixture congestion and
7 the positional role of players were investigated. Injury incidence (per 1000 match-hours)
8 did not vary between seasons (range 31.2-59.2 observed in S2 and S4 respectively,
9 $p=0.12$) or fixture formats (range 32.6-40.8 observed in European and League matches
10 respectively, $p=0.49$). In contrast, rates varied in players ($n=7$) who participated in all
11 four seasons as more injuries were sustained in S1 compared to S2 and S3 respectively
12 (88.4 vs. 49.0 vs. 49.2, both $p<0.05$). The incidence of muscle strains was higher in S4
13 versus S3 (24.7 vs. 9.9, $p<0.05$) as were injuries sustained to the ankle region in S4
14 versus S2 (15.1 vs. 4.5, $p<0.05$). The incidence of joint sprains differed between fixture
15 formats with a higher rate observed in League versus both Cup and European
16 competition respectively (10.1 vs. 3.0 vs. 3.0, both $p<0.05$). Injury incidence was not
17 associated to the time delay (number of days) separating games ($r=0.04$, $p=0.58$). A
18 very short interval (≤ 3 days) between fixtures did not result in a greater injury rate
19 ($p=0.40$) or number of days lost to injury ($p=0.73$) compared to a longer interval
20 (≥ 4 days). Finally, the incidence of injury and muscle strains (both $p<0.001$) varied
21 across positional roles with the highest rates observed in centre-forwards. These
22 findings provide further knowledge on the risk of injury in contemporary professional
23 soccer match-play and may aid in the care and management of playing resources.

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27 Keywords

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Football; Injury incidence; Time-loss injury, Epidemiology, Severity

1 Introduction

2

3 In professional soccer, the risk of injury is considerable and injury is the major
4 single factor affecting player availability [24]. In general, there is a substantially higher
5 risk of sustaining injury in match-play compared to in training. Research at elite levels
6 has reported incidences of injury in match-play ranging from a minimum of 24.6 per
7 1000 hours exposure in an English professional soccer club [24] to a maximum of 88.7
8 per 1000 hours exposure in teams competing in FIFA organised and other international
9 tournaments [20]. However, investigations have tended to examine match injuries
10 across one or two seasons [7,8,10,11,13,19,22,24,25] or during tournaments
11 [3,6,14,16,20]. To our knowledge, data on match injury rates collected and compared
12 over multiple seasons are scarce [8,17]. In addition, there is limited information on
13 injury patterns and severity across seasons [8] and further research on inter-seasonal
14 variations in injury is therefore warranted.

15 In contemporary European professional soccer, teams can participate in up to 70
16 competitive matches per season [7]. In addition to their League programmes, teams
17 compete in domestic cup competitions and some will participate in European club
18 competitions. It has been suggested that increased exposure time to match-play at the
19 highest levels of European soccer is linked to a high risk of underperformance and
20 injury [5,25]. However, there are no data on injury incidence in these specific forms of
21 match-play and whether they affect overall injury rates across a playing season. This
22 information may aid in determining the playing resources required with regard to
23 injuries across the season especially when participating in additional competitions.

24 Similarly, fixture congestion is regarded as a threat to team performance and
25 player health [21]. Yet, only limited data are available on the relationship between
26 calendar congestion and injury rates [7]. At professional levels, the performance level of

1 players in official competition is reduced when the time delay is short between
2 consecutive games [23]. As professional clubs are frequently subjected to playing
3 consecutive games within a tight time frame (e.g. ≤ 3 days), an investigation examining
4 whether there is an increased risk of injury and whether the severity of injury is greater
5 after a short delay between matches is warranted.

6 Finally, a limited amount of studies have examined the effects of playing
7 position on the risk of sustaining injury [17,22] and to our knowledge, there is no
8 information on the individual patterns and severity of injuries in match-play. In
9 addition, studies simply differentiate injury between forward, midfield and defending
10 positional groups. Analysis of elite performance suggests that the demands of the game
11 are unique and are dependent upon the precise individual positional role of the player
12 (e.g., separation between central- and wide-midfielders or central-defenders and full-
13 backs) [4,5]. An investigation of injury rates and patterns in match-play according to the
14 precise individual positional role of the player is merited.

15 The aims of this prospective study of injury rates, patterns and severity in match-
16 play in a professional soccer club were three-fold: 1) to compare injury across four-
17 seasons and three official match formats; 2) to investigate the effects of match
18 congestion on injury; 3) to compare injury according to the individual positional role of
19 the player.

20

21 Material and Methods

22 In this prospective observational study, injuries sustained in players belonging to the
23 first-team squad of a French League-1 Club were diagnosed and documented by the
24 team's physician over four-seasons. Ethics approval was obtained from the internal
25 review board of the sampled football club. This study meets the ethical standards of the

1 International Journal of Sports Medicine [15]. To ensure team and player
2 confidentiality, all performance data were anonymised before analysis.

3 The mean squad size over the four-season period was 31.0 ± 2.5 players. Players
4 were categorised into one of six individual playing positions. These positions included:
5 goalkeepers, full-backs, central-defenders, wide- and central-midfielders and centre-
6 forwards [4,5]. Epidemiological data were collected according to the position itself and
7 not the player who played in that role.

8 Data were captured during the entire 2005-2006, 2006-2007, 2007-2008 and
9 2008-2009 seasons respectively. In 2005-2006, the club participated in the UEFA
10 Champions League (CL) before entering the UEFA Cup (now the UEFA Europa
11 League). In 2006-2007, the club again participated in the CL and reached the first
12 knockout round after qualifying from the group stage. Exposure time to official
13 competition (Domestic League and Cup and European Competition) was recorded for
14 each individual player.

15 Only first-team match injuries were considered and inclusion criteria were those
16 injuries leading to a player being unable to fully participate in future training or matches
17 (i.e. time-loss injury). Injuries sustained in players when participating in training
18 sessions or matches for their national team were not included for analysis. The type,
19 location, and severity of the injury (layoff time) were recorded, the latter depending on
20 the number of days the player was absent from and unable to take full part in training or
21 competition. All injuries were followed until the final day of rehabilitation. The player
22 was considered injured until the team physician allowed full participation in collective
23 training and availability for match selection. Finally, the date of each injury was
24 recorded to examine inter-monthly variations in injury incidence across the playing

1 season. Not examined in this study were the cause of injury and the time period in the
2 match when the injury was sustained.

3 The methodologies and definitions of injury used in the present study closely
4 follow those recommended by International Soccer Injury Consensus Groups [9,12] and
5 are similar to those employed in other investigations on elite soccer play
6 [3,6,10,11,14,18,19,24,25].

7 All statistical analyses were conducted using SPSS for Windows Version 14.0
8 (SPSS Inc., Chicago, IL, USA). Results are reported as means and standard deviations
9 (mean \pm SD) calculated by conventional procedures unless otherwise stated. The
10 statistical methods applied were frequencies, cross-tabulations and descriptive statistics.
11 Injury incidences are reported as injuries/1000 player match-hours (95% confidence
12 interval) unless otherwise stated. A Kruskal-Wallis One-Way Analysis of Variance on
13 Ranks test was used to compare injury incidences in official competition between
14 seasons and across the three match formats: Domestic League and Cup and European
15 Competition. Follow-up univariate analyses using Tukey's HSD test were employed
16 where appropriate. A Repeated Measures Analysis of Variance on Ranks was used to
17 investigate injury rates in players who participated across all 4 seasons. The relationship
18 between the time delay (in days) separating games and injury incidence was explored
19 using Pearson's product-moment correlation. A Mann-Whitney *U* test was used to test
20 injury incidence and layoff time after a short delay (≤ 3 days) compared to a longer delay
21 (≥ 4 days) between games. The significance level was set at $p < 0.05$.

22

23 Results

1 Over the four-seasons, a total of 192 matches were played (Table 1) with a median of 23
2 matches per player per season (range: 1-48 matches). Players were exposed to a total of
3 3246.7 hours match-play (range across seasons: 709.8-912.1 hours).

4

5 Table 1 about here.

6

7 Injury patterns across seasons and competition formats

8 Across the four seasons, a total of 130 match injuries (40.0%) were classed as
9 time-loss injuries. Incidence of injury according to playing season and match format are
10 presented in Table 1. Injury incidence peaked in the 2008/09 season but did not vary
11 between seasons ($p=0.120$). In contrast, injury incidence varied significantly between
12 seasons in 7 players who participated in all four seasons ($p=0.037$) with a higher rate of
13 injury reported in 2005/06 (88.4) compared to in 2006/07 (49.0) and 2007/08 (49.2)
14 (both $p<0.05$). While injury incidence was highest in League matches, no difference
15 was observed between competition formats ($p=0.496$).

16 Table 2 reports the nature and anatomic location of injuries across the four-
17 season study period. Traumatic and overuse injuries constituted 84.6% and 15.4% of the
18 total number of injuries respectively. Overall, muscle strains were the most common
19 type of injury sustained (33.9%) followed by joint sprains (22.3%) and
20 contusions/haematomas (20.0%). Injuries to the knee region (21.5%) were most
21 common followed by the ankle (20.0%) and the lower leg (10.0%) regions. Of the
22 strains, 58.8% affected the upper leg and 11.0% the lower leg while sprains (69.0%) and
23 contusions (34.6%) mostly concerned the ankle and knee respectively.

24 Due to small numbers, the rates of only the most common injury types
25 (contusions, sprains and strains) and locations (ankle, knee, lower leg, hamstring and

1 groin) were compared between seasons and match formats. Muscle strains varied across
2 seasons ($p=0.043$) with a higher incidence observed in 2008/09 versus 2007/08 (24.7 vs.
3 9.9, $p<0.05$). Similarly, there was a difference between seasons in the incidence of ankle
4 injuries ($p=0.037$) as more injuries to this region were sustained over the 2008/09
5 season compared to the 2006/07 season (15.1 vs. 4.5, $p<0.05$). While the occurrence of
6 joint sprains varied according to match format ($p=0.042$) with a higher incidence
7 observed in League versus both Cup and European competition (10.1 vs. 3.0 vs. 3.0,
8 both $p<0.05$), there was no difference between competition formats in the rate of injury
9 to any of the five anatomic locations.

10

11 Table 2 about here.

12

13 Overall, the mean layoff time per injury was 15 ± 26 days. While no significant
14 difference was reported between seasons for the mean layoff time per injury ($p=0.242$),
15 values varied substantially (range: 8 ± 7 days in 2006/07 to 24 ± 20 days per injury in
16 2007/08. Similarly, no difference between seasons in mean layoff time was reported in
17 7 players who participated in all four seasons ($p=0.278$). Again, while no difference was
18 observed in mean layoff time per injury between competition formats ($p=0.184$), a
19 considerably longer layoff was observed in League Competition (15 ± 29 days)
20 compared to Cup games (9 ± 8 days).

21

22 Inter-seasonal variations and effects of match congestion

23 The overall incidence of injury varied between months ($p<0.001$) and peaked in
24 March (59.6 per 1000 hours exposure) and was lowest in May (19.9 per 1000 hours
25 exposure) (Figure 1).

1 Over the four year period, the mean recovery time between games was 5 ± 3
2 days. Altogether, 76 games were played with a short time interval (≤ 3 days) and 116
3 games with a longer interval (≥ 4 days) separating competition. No association was
4 observed between the time interval separating games and injury incidence ($r=0.038$,
5 $p=0.581$). Similarly, no difference ($p = 0.406$) was observed in the incidence of injury
6 after a short interval separating games (45.0 ± 54.6 per 1000 hours, 0.8 ± 0.9 injuries
7 per match) compared to that after a longer interval (37.7 ± 48.4 per 1000 hours, injuries
8 0.6 ± 0.8 per match). Altogether, 57 injuries (43.8% of the total) were sustained after a
9 short interval separating games of which 57.9% were sustained by a player who had
10 played in both games. In comparison, 73 injuries (56.2% of the total) were sustained
11 after a longer interval of which 67.1% were incurred in a player who had played in both
12 games. Layoff time per injury was identical (15 ± 25 days vs. 15 ± 28 days, $p=0.730$)
13 between consecutive games separated by a short versus a longer interval.

14

15 Figure 1 about here.

16

17 Positional differences

18 Table 3 reports the overall incidence of injury, mean layoff time per injury and
19 the most common types of injury sustained according to positional role. A difference in
20 the overall incidence of injury was observed between positional roles ($p<0.001$) with
21 centre-forwards recording the highest rate (post hoc differences from $p<0.05$ to $p<0.001$
22 versus other positional roles). While the mean injury layoff duration did not vary
23 between positional roles ($p=0.544$), there was a difference in the incidence of muscle
24 strains ($p<0.001$) with the highest rate of these injuries reported in centre-forwards (post
25 hoc versus all positional roles, $p<0.001$). Muscle strains were the most common injury

1 across all positional roles except in central-defenders in whom sprains were more
2 frequently observed. No differences were reported for any of the injury locations across
3 playing positions.

4

5 Table 3 about here.

6

7 Discussion

8 The aim of this four-season study on injury rates and patterns in a professional
9 soccer club was to examine inter-seasonal variations in match injuries and the effects of
10 match type, fixture congestion and positional role on injury. Results showed that
11 incidence and severity of match injury did not vary between seasons and were not
12 influenced by competition format. In contrast, the incidence of injury varied across
13 seasons in players who participated in all four seasons. The incidence of muscle strains
14 and injuries to the ankle regions differed across seasons as did the rate of joint sprains
15 between fixture formats. Injury rates were not associated to the time interval between
16 games and a very short interval between fixtures did not result in a higher injury risk or
17 layoff time. A higher overall risk of sustaining injury and muscle strains in particular
18 was observed in centre-forwards compared to the other positional roles.

19 In the present club, the overall incidence of match injury (40.5) was substantially
20 higher than rates previously reported for other professional soccer clubs in equivalent
21 European Leagues [8,18,24,25]. Regional differences in injury incidences and patterns
22 due to playing style or intensity and climate may explain this discrepancy [25].
23 However, the stable injury incidence over the study period is in agreement with the
24 results of two recent studies in that injury rates in other professional European soccer
25 clubs were stable over a two- [13] and seven-season period respectively [8]. This

1 finding is noteworthy and suggests that the risk of sustaining injury in players in the
2 present club whilst higher than that reported in other professional clubs, has not
3 changed over a four-season period. In contrast, the significant inter-seasonal variation in
4 injury rate observed in players who participated in all four seasons is noteworthy.
5 Similarly, the significant difference between seasons in muscle strains and injuries to
6 the ankle region for the entire squad is of interest and is in accordance with previous
7 research that patterns of injury can vary across seasons [8,13]. Hägglund and co-
8 workers [13] suggested that disparities in injury patterns may reflect natural variations
9 across seasons or differences in the study environment. Another possible explanation
10 for the present inter-seasonal variations may be changes in coaching staff and training
11 methods or player turnover. Indeed, the former has a major influence on injury
12 prevention especially in the design of training programmes and the safety culture it
13 promotes [26]. Nevertheless, these findings suggest the need for a prolonged injury
14 study period to ensure consistent, in-depth, and accurate injury profiles in elite soccer.
15 The findings also emphasise the permanent need for individualised monitoring of injury
16 rates and patterns as well as the implementation and evaluation of injury prevention
17 measures.

18 Participation in top European Competition did not result in a higher overall
19 injury rate across seasons as no differences in injury incidence were observed in these
20 matches compared to League games. In addition, the severity of injury did not vary
21 according to competition format. These results imply that participation in other forms of
22 competition did not influence the risk or seriousness of injury in the present elite
23 footballers and also suggests that the club coped well with the additional burden of
24 European competition and domestic Cup matches. However, the chance of sustaining a
25 joint sprain was dependent on fixture format with the highest rate observed in domestic

1 League games. It is difficult to suggest valid reasons for this discrepancy and further
2 research is merited especially in regard to the causes of these injuries across the
3 different competition formats.

4 In this study and in general accordance with the medical literature, injury rates
5 and patterns varied substantially over the course of the playing season with overall
6 injury incidence peaking in March. However, no association was observed between the
7 time delay separating games and injury rate. Similarly, when the team was forced to
8 play consecutive games separated by a short interval (≤ 3 days), injury rate and layoff
9 time were comparable to those after a longer interval (≥ 4 days). This result implies that
10 congested periods of match-play did not increase injury risk or severity. The club's
11 player rotation policies and/or recovery strategies may be a reasonable explanation for
12 this result. These findings lend support to findings in professional Spanish soccer in that
13 the results of teams in official competition are not affected by fixture congestion and
14 that players are quite capable of coping with a busy match schedule.[21] Findings from
15 this study may therefore assure coaches, support staff and players alike that in a
16 professional setting, high-performance soccer players can cope with a congested playing
17 calendar. Further research is nevertheless warranted to investigate the injury risk in
18 'star' players who may participate more frequently in consecutive matches within a tight
19 time frame over the course of the season.

20 Previous studies examining injuries in American Major League Soccer [22] and
21 the English Premier League [18] demonstrated no effect of four typical playing
22 positions (goalkeeper, defender, midfielder and forward) on the occurrence of injury.
23 The finding that centre-forwards in the present club incurred more injuries and sprains
24 in particular compared to other positional roles is therefore noteworthy. This result
25 suggest that future studies should analyse injury according to the precise positional role

1 of the player as well as demonstrating a need for injury prevention training schemes to
2 be tailored to the individual positional role. However, care is needed when interpreting
3 these findings as injury rates and patterns were investigated according to the position
4 itself and on several occasions over the course of the season, players were rotated across
5 positions and may have found themselves in an unfamiliar positional role. Similarly,
6 some players may have changed playing positions during matches when substitutions or
7 changes in team formation were made. Further research is therefore required to discern
8 whether the position itself was the potential risk factor or whether certain individuals
9 across teams were simply more at risk of injury.

10 A limitation of the present study was that the cohort included players from only
11 one soccer club and the patterns observed may only be a reflection of this particular
12 team. Consequently, the findings may not be applicable to other elite soccer clubs.
13 Similar investigations involving a substantially larger sample of clubs to increase
14 statistical power and more injury cases to allow comparisons of variations in all injury
15 types and locations are therefore warranted. In addition, match exposure time and
16 injuries sustained in players with national team obligations and their links with the issue
17 of match congestion were not examined. A previous study showed that half of players
18 belonging to teams that participated in Champions League football were exposed to
19 international duties and 4% of all injuries occurred under these circumstances [25].
20 Furthermore, in order to suggest preventive strategies specific to soccer, it is necessary
21 to have detailed information combining game-specific and medical information on risk
22 factors for injury [1] and the mechanisms involved in match-play injuries [2] which
23 were not recorded in the present study. Nevertheless, the obvious strength of this
24 investigation is its long-term span and prospective nature. Also, the present study
25 methodology closely respects internationally recommended injury recording systems

1 [9,12] specifically developed to address injury in soccer allowing the results to be
2 compared to current and future research into soccer injuries.

3

4 Conclusion

5 In professional soccer, continuous data over several seasons are needed to
6 observe the development of specific trends over time, but also to screen for areas of
7 concern and form injury prevention hypotheses. This study has shown that while the
8 risk and severity of injury has not changed over a four-year period and that the present
9 club coped well with a congested match calendar, patterns of injury can vary over time
10 and may depend on the types of fixture played or the precise positional role of the
11 player. Taken in total, the data from this study provide sports medicine practitioners
12 with useful information concerning the injury consequences of the game of soccer and
13 may aid medical and coaching staff in the care and management of playing resources.

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Table 1 Incidence of match injury across playing seasons and match formats.

Incidences include 95% confidence intervals.

Means \pm standard deviations.

Table 2 Incidence of injury according to anatomic location and type across playing seasons.

* $p < 0.05$ compared to 2006/07 season.

Table 3 Incidence, layoff time per injury and common types of injury across positional roles.

Incidences include 95% confidence intervals.

Means \pm standard deviations.

* $p < 0.001$ compared to goalkeepers, $p < 0.01$ compared to central-defenders and wide-midfielders, $p < 0.05$ compared to fullbacks and central-midfielders.

$p < 0.001$ compared to all other positional roles.

Figure 1 Seasonal disposition of overall injury incidence and incidence of traumatic and overuse injuries

Table 1 Incidence of match injury across playing seasons and match formats.

Season	Total			League			Domestic Cup			European Competition		
	Games	Injuries	Incidence	Games	Injuries	Incidence	Games	Injuries	Incidence	Games	Injuries	Incidence
2005-2006	54	36	39.5 (26.6-52.4)	38	25	39.0 (23.7-54.3)	6	4	39.4 (0.8-77.9)	10	7	41.5 (10.7-72.2)
2006-2007	53	28	31.2 (19.6-42.8)	38	23	35.8 (13.6-32.4)	5	1	11.8 (-11.4-34.9)	10	4	23.7 (0.5-46.9)
2007-2008	42	23	32.4 (19.2-45.6)	38	21	32.7 (12.0-30.0)	4	2	29.6 (-11.4-70.7)	–	–	–
2008-2009	43	43	59.0 (17.6-76.6)	38	36	55.9 (24.2-47.8)	5	7	82.6 (21.4-143.8)	–	–	–
Mean per season	48.0 ± 6.4	32.5 ± 8.8	40.5 (33.5-47.5)	38 ± 0.0	26.3 ± 6.7	40.8 (33.0-48.6)	5.0 ± 0.8	3.5 ± 2.6	40.7 (19.4-62.0)	10 ± 0.0	5.5 ± 2.1	32.6 (21.4-43.8)

Incidences include 95% confidence intervals.

Means ± standard deviations.

Table 2 Incidence of injury according to anatomic location and type across playing seasons.

Injury location and type	2005/06		2006/07		2007/08		2008/09		All seasons	
	N	Incidence	N	Incidence	N	Incidence	N	Incidence	N	Incidence
Knee	12	13.2	4	4.5	4	5.6	8	11.0	28	8.6
Sprain	4	4.4	1	1.1	2	2.8	1	1.4	8	2.5
Tendinopathy	2	2.2	0	0.0	0	0.0	1	1.4	3	0.9
Chondropathy	0	0.0	2	2.2	1	1.4	2	2.7	5	1.5
Meniscus	2	2.2	0	0.0	0	0.0	1	1.4	3	0.9
Contusion/haematoma	4	4.4	1	1.1	1	1.4	3	4.1	9	2.8
Ankle	6	6.6	4	4.5	5	7.0	11	15.1*	26	8.0
Sprain	4	4.4	3	3.3	4	5.6	9	12.3	20	6.2
Tendinopathy	0	0.0	0	0.0	1	1.4	0	0.0	1	0.3
Fracture	1	1.1	0	0.0	0	0.0	1	1.4	2	0.6
Contusion/haematoma	1	1.1	1	1.1	0	0.0	1	1.4	3	0.9
Lower leg	1	1.1	6	6.7	2	2.8	4	5.5	13	4.0
Strain	1	1.1	4	4.5	2	2.8	4	5.5	11	3.4
Tendinopathy	0	0.0	1	1.1	0	0.0	0	0.0	1	0.3
Contusion/haematoma	0	0.0	1	1.1	0	0.0	1	1.4	2	0.6
Groin	1	1.1	2	2.2	1	1.4	8	11.0	12	3.7
Strain	0	0.0	2	2.2	1	1.4	7	9.6	10	3.1
Tendinopathy	1	1.1	0	0.0	0	0.0	1	1.4	2	0.6
Hamstring	5	5.5	2	2.2	1	1.4	3	4.1	11	3.4
Strain	3	3.3	2	2.2	1	1.4	3	4.1	9	2.8
Tendinopathy	2	2.2	0	0.0	0	0.0	0	0.0	2	0.6
Quadriceps	3	3.3	1	1.1	1	1.4	4	5.5	9	2.8
Strain	1	1.1	1	1.1	1	1.4	3	4.1	6	1.8
Tendinopathy	1	1.1	0	0.0	0	0.0	0	0.0	1	0.3
Contusion/haematoma	1	1.1	0	0.0	0	0.0	1	1.4	2	0.6
Abdomen/thorax	2	2.2	1	1.1	2	2.8	0	0.0	5	1.5
Strain	1	1.1	1	1.1	1	1.4	0	0.0	3	0.9
Contusion/haematoma	1	1.1	0	0.0	1	1.4	0	0.0	2	0.6
Foot	1	1.1	1	1.1	2	2.8	2	2.7	6	1.8
Contusion/haematoma	1	1.1	1	1.1	1	1.4	2	2.7	5	1.5
Other overuse	0	0.0	0	0.0	1	1.4	0	0.0	1	0.3
Back/neck	1	1.1	1	1.1	3	4.2	0	0.0	5	1.5

Back/neck pain	1	1.1	1	1.1	2	2.8	0	0.0	4	1.2
Strain	0	0.0	0	0.0	1	1.4	0	0.0	1	0.3
Hand	2	2.2	1	1.1	1	1.4	0	0.0	4	1.2
Fracture	2	2.2	1	1.1	1	1.4	0	0.0	4	1.2
Pelvis	2	2.2	0	0.0	0	0.0	1	1.4	3	0.9
Strain	2	2.2	0	0.0	0	0.0	1	1.4	3	0.9
Head/Face	0	0.0	0	0.0	1	1.4	1	1.4	2	0.6
Fracture	0	0.0	0	0.0	0	0.0	1	1.4	1	0.3
Contusion/haematoma	0	0.0	0	0.0	1	1.4	0	0.0	1	0.3
Hip	0	0.0	2	2.2	0	0.0	0	0.0	2	0.6
Contusion/haematoma	0	0.0	2	2.2	0	0.0	0	0.0	2	0.6
Shoulder	0	0.0	1	1.1	0	0.0	1	1.4	2	0.6
Sprain	0	0.0	1	1.1	0	0.0	1	1.4	2	0.6
Arm	0	0.0	1	1.1	0	0.0	0	0.0	1	0.3
Fracture	0	0.0	1	1.1	0	0.0	0	0.0	1	0.3

*p<0.05 compared to 2006/07 season.

1 Table 3 Incidence, layoff time per injury and common types of injury across positional roles.

Playing position	Total	Injuries		Incidence		
		Incidence	Layoff duration (days)	Strains	Sprains	Contusions
Goalkeepers	7	23.8 (6.2-41.4)	16.1 ± 11.8	13.7 (0.3-27.1)	0.0	0.0
Fullbacks	24	41.0 (24.6-57.4)	23.4 ± 8.1	12.0 (3.1-20.9)	10.2 (2.0-18.4)	12.0 (3.1-20.9)
Central-defenders	21	35.7 (20.4-51.0)	12.9 ± 49.1	6.8 (0.1-13.5)	13.7 (4.2-23.2)	10.3 (2.1-18.5)
Central midfielders	30	36.3 (23.3 (49.3)	11.5 ± 19.8	12.5 (4.8-20.2)	7.5 (1.5-13.5)	5.0 (0.1-9.9)
Wide-midfielders	19	32.2 (17.7-46.7)	10.8 ± 13.8	12.0 (3.1-20.9)	6.8 (0.1-13.5)	10.2 (2.0-18.4)
Forwards	29	77.2 (49.1-105.3)*	18.6 ± 29.2	32.1 (13.9-50.3)#	13.4 (1.6-25.1)	8.0 (-1.1-17.1)

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3 Incidences include 95% confidence intervals.

4 Means ± standard deviations.

5 *p<0.001 compared to goalkeepers, p<0.01 compared to central-defenders and wide-midfielders, p<0.05 compared to fullbacks and central-midfielders.

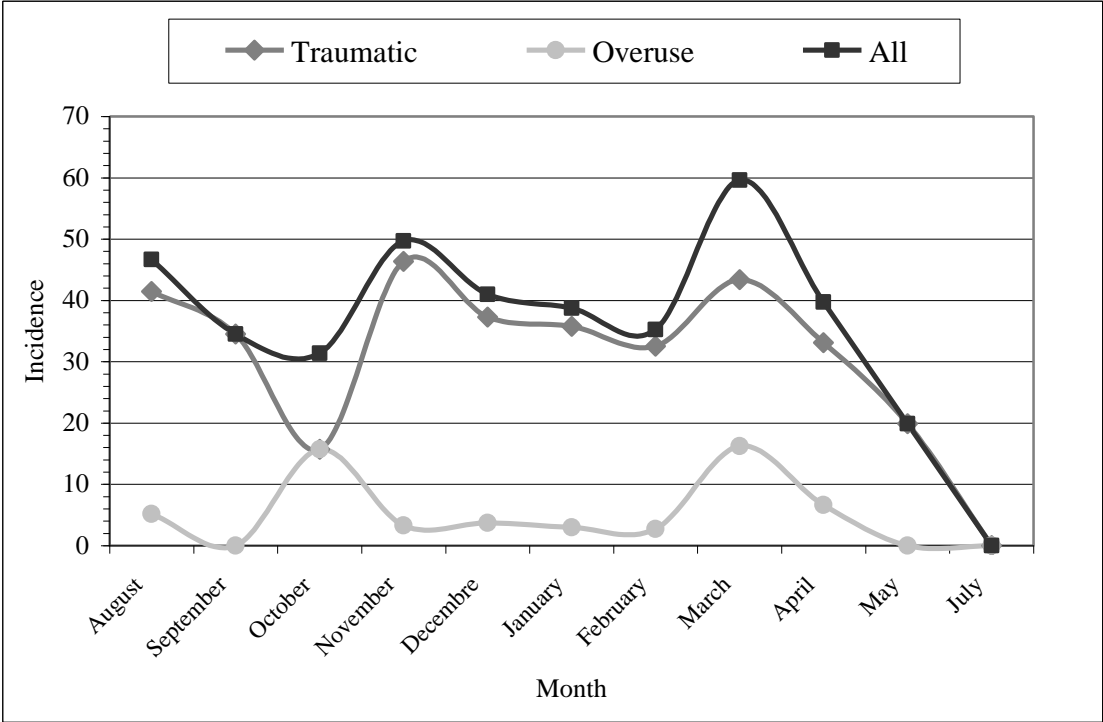
6 #p<0.001 compared to all other positional roles.

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1 Figure 1 Seasonal disposition of overall injury incidence and incidence of traumatic and overuse injuries.

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