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Injury Scheme Claims in Gaelic Games: A Review of 2007–2014

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Context: Gaelic games (Gaelic football and hurling) are indigenous Irish sports with increasing global participation in recent years. Limited information is available on longitudinal injury trends. Reviews of insurance claims can reveal the economic burden of injury and guide cost-effective injury-prevention programs.

Objective: To review Gaelic games injury claims from 2007–2014 for male players to identify the costs and frequencies of claims. Particular attention was devoted to lower limb injuries due to findings from previous epidemiologic investigations of Gaelic games.

Design: Descriptive epidemiology study.

Setting: Open-access Gaelic Athletic Association Annual Reports from 2007–2014 were reviewed to obtain annual injury-claim data.

Patients or Other Participants: Gaelic Athletic Association players.

Main Outcome Measure(s): Player age (youth or adult) and relationships between lower limb injury-claim rates and claim values, Gaelic football claims, hurling claims, youth claims, and adult claims.

Results: Between 2007 and 2014, €64 733 597.00 was allocated to 58 038 claims. Registered teams had annual claim frequencies of 0.36 with average claim values of €1158.4 ± 192.81. Between 2007 and 2014, average adult claims were always greater than youth claims (6217.88 versus 1036.88), while Gaelic football claims were always greater than hurling claims (5395.38 versus 1859.38). Lower limb injuries represented 60% of all claims. The number of lower limb injury claims was significantly correlated with annual injury-claim expenses ($r = 0.85$, $P = .01$) and adult claims ($r = 0.96$, $P = .01$) but not with youth claims ($r = 0.69$, $P = .06$).

Conclusions: Reducing lower limb injuries will likely reduce injury-claim expenses. Effective injury interventions have been validated in soccer, but whether such changes can be replicated in Gaelic games remains to be investigated. Injury-claim data should be integrated into current elite injury-surveillance databases to monitor the cost effectiveness of current programs.

Key Words: Gaelic football, hurling, injuries, insurance claims

Key Points

- Previously reported team injury rates in Gaelic games were 97 times greater than current team claim frequencies.
- Knee, leg, ankle, and groin structures were responsible for the majority of lower limb injury claims.
- Annual claim expenses were significantly correlated with lower limb injury-claim frequencies, suggesting increased savings if lower limb injuries are reduced.

Hurling and Gaelic football are the national sports of Ireland, governed by the Gaelic Athletic Association (GAA). The games are played by more than 100 000 players in 2600 clubs, 100 of which are based internationally. Match play lasts 60–70 minutes and is characterized by intermittent periods of high-intensity, multidirectional running.¹ The pitch dimensions are 145 m long by 90 m wide.¹ Each team has 15 players and can make 5 substitutions. The aim is to outscore the opposition at H-shaped goal posts: 1 point is awarded for striking or kicking the ball over a crossbar, and 1 goal (3 points) is awarded for striking or kicking the ball under the crossbar past a goalkeeper. Shoulder-to-shoulder contact is permitted in both codes; however, hurling differs given its stick-and-ball nature. The GAA is an amateur organization, as no participants receive payment for playing hurling or Gaelic football. Intercounty competitions represent elite levels of

Gaelic games, whereas community clubs represent subelite and recreational levels. Players often participate in both codes (dual players) and elite players also participate in subelite competitions.

Recent publications reported injury incidences in elite Gaelic games. Elite hurling seasonal injury rates were 1.2 per player with incidences of 2.9 and 61.8 per 1000 training and match hours, respectively.¹ Almost 62% of injuries involved no contact with another player. Sprinting (24.3%), landing (13.7%), and turning (7.1%) were common mechanisms of injury. Lower limb injuries accounted for 68.3% of all elite hurling injuries.¹ Recurrences were associated with 17.4% of all injuries; muscles (36.9%), ligaments (17.6%), and tendons (8.3%) were the most commonly injured tissues.¹ The severity of injuries in hurling has been reported as 45.0% mild (out 1–7 days),

45.0% moderate (out 8–21 days), and 9.5% severe (out >21 days).¹

In elite Gaelic football, muscular (42.6%) and lower limb (76.0%) injuries were most frequent.² Recurrences accounted for 23% of all injuries. When compared with training exposures, lower limb injuries were 12.5 and 17.9 times more likely during match play in elite Gaelic football and hurling, respectively.³ Mean time losses from sport (ie, unable to participate in team activities due to injury) were 16 days in Gaelic football and 14 days in hurling.³

Injury incidences of 5.8 per 1000 training hours and 51.2 per 1000 match hours were reported in subelite Gaelic football.⁴ This represents an 8.9-fold increase in injury incidences during match play despite 4.9 times greater training hours (5525 versus 1133 hours).⁴ Recurrent injuries were present in 23% of cases. Despite the physical nature of Gaelic football, 72.2% of injuries involved no contact with another player. The severity of training time-loss injuries was reported as 31.3% mild (out 1–7 days), 37.5% moderate (out 8–21 days), and 28.2% severe (out >21 days).⁴ Conversely, 32.8%, 53.5%, and 13.8% of match-play injuries resulted in mild, moderate, and severe time loss, respectively.⁴

Based on previous research,^{1–4} lower limb injuries are the most prevalent injuries in the Gaelic Games. Such injuries may adversely affect a player's welfare beyond his or her sporting career. Of retired Australian Football League players, 64% reported being affected daily by previous injuries, with 60% requiring ongoing treatment.⁵ Osteoarthritis occurred in 51% of patients 10 years after anterior cruciate ligament (ACL) reconstruction, with a rate of 95% after 15–20 years.⁶ A total of 17% of former professional soccer players with knee and ankle osteoarthritis reported pain during walking and climbing stairs; 28% noted discomfort while working.⁷ Such trends highlight the need to consider injury risk factors and prevention guidelines when planning training programs and competition schedules during sporting careers.⁸

Injury-claim databases provide useful information for the study of sports injuries and can guide research into risk factors and injury-prevention programs.⁹ The GAA Injury Scheme aims to partially compensate elite and subelite male players for nonrecoverable costs from injuries sustained during official GAA activities, such as match play and training. An injury claim is only eligible after diagnosis by a medical practitioner. Therefore, in the current study, *injury* was defined as a case in which a player required medical attention or investigation. However, applications can only be made after a player's attempt to claim from his private medical insurer.¹⁰ (Only male players are covered under this scheme as females' games are overseen by a different governing structure.) Applications must be made within 60 days of injury. A maximum of €4500 per claim for medical costs applies, including limits of €300 per magnetic resonance imaging scan and €320 for all postoperative treatment. Players can seek compensation for loss of earnings for 2–4 weeks (up to €200) or 5–52 weeks (up to €400). Daily supplementary benefits of €400 are payable only for 10–15 consecutive hospital days. The first €100 of every claim is excluded. Permanent disability benefits of €100 000–€300 000 are available. The aim of our study was to review GAA Injury Scheme

claims for male players from 2007–2014 to identify the costs and frequencies of injury claims. Particular attention was devoted to lower limb injuries due to findings from previous epidemiologic investigations of Gaelic games.^{1–4}

METHODS

Reports of GAA financial activities are published each year after an annual general assembly meeting. We reviewed open-access GAA annual reports to obtain injury-claim data. Data from 2007–2014 were included for analysis. Data were classified as *youth* (<18 years) or *adult* (≥18 years). Data were entered into statistical analysis software (SPSS version 20.0; IBM Corporation, Armonk, NY). Results are presented as mean ± standard deviation. The Pearson correlation was used to analyze relationships between lower limb injury-claim rates and the following variables: claim values, Gaelic football claims, hurling claims, youth claims, adult claims. Significance was set a priori at $P = .05$. Ethical approval was not required for this study as no individuals were identified or followed.

RESULTS

From 2007–2014, injury claims totaled €64 733 597.00 with an annual cost of €8 091 699.60 ± 845 600.20 (Table 1). The mean number of annual registered teams for the time period was 19 892.63 ± 481.70. Fund contributions from registered teams totaled €56 089 200.00. In total, 58 038 claims were registered during the investigated 8-year period. Mean annual claim frequency was 7254.75 ± 2063.65, and the average claim value was €1158.40 ± 192.81.

Mean annual claims per registered team were 0.36 ± 0.10, equating to 2.92 ± 0.78 per affiliated club. Mean frequency of annual youth claims was 1036.88 ± 520.14. Mean frequency of annual adult claims was 6217.88 ± 1762.77. Adult players accounted for the majority of claims (85.7% adult versus 14.7% youth), and football claims were more common than hurling claims (74.4% versus 25.6%, respectively). Mean annual hurling claims totaled 1859.38 ± 580.12, compared with annual Gaelic football claims of 5395.38 ± 1813.74.

Most of the investigated metrics were greatest during 2007–2010 when compared with later years (Table 2). Injury-claim expenses were greatest in 2009 (€9 417 598.00) and lowest in 2011 (€6 514 802.00). The average claim value increased from 2011 (€1087.25) to 2014 (€1313.24). The number of lower limb injury claims also increased from 2011 (3319) to 2014 (3805), as did football and youth claims.

A total of 34 811 lower limb claims were reported from 2007–2014, for an average of 4351.40 ± 1360.10 claims annually (Table 1). Claims per lower limb injury site varied from season to season (Table 3). Hip injury claims increased by 4.89% from 1.17% in 2007 to 6.06% in 2014. Knee injury claims increased by 13.30% from 2007–2014. Conversely, groin injury claims decreased by 5.23% from 7.22% to 1.97% over the investigated period. During 2010–2012, ACL injury claims totaled 1062, constituting 5.9% of all injury claims during this time. Additionally, 875 (3.60%) thigh injury claims were reported from 2011–2014.

Table 1. Descriptive Statistics, Injury Scheme Claims in Gaelic Games, 2007–2014

Item	Sum	Mean ± SD	Minimum	Maximum
Total registered teams, No.	159 141	19 892.63 ± 481.70	18 957	20 320
Total registered clubs, No.	19 933	2491.63 ± 223.29	2014	2709
Claim values, €				
Annual claim scheme expenses	64 733 597.00	8 091 699.63 ± 845 600.20	6 514 802.00	9 417 598.00
Average claim value		1158.40 ± 192.81	803.00	1327.29
Team contributions	56 089 200.00	5 985 392.70 ± 525 154.20	5 062 558.00	6 480 440.00
Fund deficits	(8 644 397.00)	(1 080 549.63) ± (717 858.20)	245 798.00	(2 301 398.00)
Claim frequencies				
Annual, No.	58 038	7254.75 ± 2063.65	5992	11 728
Lower limb, No.	34 811	4351.38 ± 1360.09	3319	7220
Lower limb, %	59.98	59.65 ± 2.5	55.39	62.2
Per club, No.	23.34	2.92 ± 0.78	2.21	4.51
Per team, No.	2.90	0.36 ± 0.10	0.30	0.58
Claims per code, No.				
Hurling	14 875	1859.38 ± 580.12	1018.00	3116.00
Football	43 163	5395.38 ± 1813.74	4064.00	8612.00
Claims per age grade, No.				
Youth (<18 y)	8295	1036.88 ± 520.14	718	2201
Adult (≥18 y)	49 743	6217.88 ± 1762.77	5238	10 368

Knee (26.67%), leg (14.61%), ankle (8.48%), and groin (4.6%) structures were responsible for most lower limb injury claims from 2007–2014.

Annual injury-claim expenses demonstrated a significant correlation with the number of lower limb injury claims ($r = 0.85$, $P = .01$). The number of lower limb injury claims was significantly correlated with the number of Gaelic football claims ($r = 0.97$, $P = .01$). No correlation occurred between the number of lower limb injury claims and the number of hurling claims ($r = 0.54$, $P = .17$). The number of lower limb injury claims was significantly correlated with adult claims ($r = 0.96$, $P = .01$) but not with youth claims ($r = 0.69$, $P = .06$).

DISCUSSION

To our knowledge, this is the first longitudinal review of GAA Injury Scheme claims. Between 2007 and 2014, €64 733 597.00 was allocated to 58 038 claims, yet fees from registered teams totaled only €56 089 200. According to GAA publications, deficits (€8 644 397.00) were covered by gate receipts, accumulated interest, and GAA funding. Considering the amateur status of the GAA, such funding models may impair support for other projects. In 2009, paid claims peaked at €9 417 598.00, prompting changes in eligibility criteria. These centered mainly on greater administrative requirements, such as verification of a suspected injury by a club official before diagnosis by a

Table 2. Annual Injury Scheme Claim Details, Gaelic Games, 2007–2014

Item	Year							
	2007	2008	2009	2010	2011	2012	2013	2014
Registered teams, No.	20 303	20 320	20 120	18 957	19 420	19 774	20 157	20 090
Registered clubs, No.	2322	2610	2600	2615	2709	2550	2513	2014
Claim values, €								
Total claim scheme expenses	8 400 781.00	8 567 080.00	9 417 598.00	8 124 333.00	6 514 802.00	7 455 546.00	8 002 356.00	8 251 101.00
Average claim value	1225.49	956.15	803.00	1327.29	1087.25	1240.97	1313.80	1313.24
Team contributions	7 369 000.00	7 199 600.00	7 116 200.00	6 881 800.00	6 760 600.00	6 817 800.00	6 988 400.00	6 955 800.00
Fund deficits	(1 031 781.00)	(1 367 480.00)	(2 301 398.00)	(1 242 533.00)	245 798.00	(637 746.00)	(1 013 956.00)	(295,301.00)
Claim frequencies								
Annual, No.	6855	8960	11 728	6121	5992	6008	6091	6283
Lower limb, No.	4151	5573	7220	3453	3319	3550	3740	3805
Lower limb, %	60.55	62.20	61.56	56.41	55.39	59.09	61.40	60.56
Per club, No.	2.95	3.43	4.51	2.34	2.21	2.36	2.42	3.12
Per registered team, No.	0.34	0.44	0.58	0.32	0.31	0.30	0.30	0.31
Claims per code, No.								
Hurling	1735	1018	3116	1699	1928	1792	1724	1863
Football	5120	7942	8612	4422	4064	4216	4367	4420
Claims per age grade, No.								
Youth (<18 y)	740	2201	1360	752	718	770	734	1020
Adult (≥18 y)	6115	6759	10 368	5369	5274	5238	5357	5263

Table 3. Lower Limb Injury-Claim Sites, Gaelic Games, 2007–2014

Claims	Mean ± SD	Year							
		2007	2008	2009	2010	2011	2012	2013	2014
Total injury, No.	7254.75 ± 2063.65	6855	8960	11728	6121	5992	6008	6091	6283
Percentage of total									
Hip	2.84 ± 1.94	1.17	1.71	2.11	1.90	1.75	2.20	5.83	6.06
Groin	4.60 ± 2.58	7.22	7.68	6.67	5.39	1.13	2.08	4.68	1.97
Leg	14.61 ± 4.90	20.92	19.46	20.66	9.88	12.55	12.03	12.05	9.29
Knee	26.67 ± 5.45	20.09	21.07	20.09	28.82	29.62	32.07	28.24	33.39
Ankle	8.48 ± 1.25	9.13	10.17	10.10	8.20	6.94	7.04	8.57	7.72
Foot	1.84 ± 0.12	1.85	1.89	1.70	1.96	1.70	1.75	1.82	2.04
Toe	0.60 ± 0.75	0.18	0.22	0.25	0.26	1.69	1.91	0.21	0.08

medical practitioner and inclusion of referee reports for injuries sustained during match play.¹⁰ Claim frequency declined from 11 728 claims in 2009 to 5992 claims in 2011. A comparison of claim frequencies for 2007 (6855 claims) and 2014 (6283 claims) revealed a decline of 8.3%. However, the average claim value increased by 7.1% from 2007 (€1225.49) to 2014 (€1313.24). Claim frequencies have also been increasing since 2012. Furthermore, standardizing claim frequencies relative to registered clubs or teams demonstrates that claim frequencies were similar between the 2010 and 2014 seasons. Such findings suggest that criteria changes, rather than injury-prevention interventions, likely contributed to any observed declines in claim frequencies.

In comparison with other sports, the average claim cost in Gaelic games (€1158.40 ± 192.81) was lower than that for moderate and severe injuries in rugby league (NZ\$7100.00 ± 945.00 [€4309.10 ± 537.50]) yet greater than that for mild injuries (NZ\$161.00 ± 340 [€97.70 ± 20.60]).¹¹ A limitation of the present study is our inability to differentiate among claims for mild, moderate, and severe injuries. However, the average Gaelic games claim cost was greater than that reported in American high school athletics (\$709.00 [€940.10]).¹² Eligibility criteria and entitlement values must be considered when insurance claims in different cohorts are compared.

In our study, registered teams had annual claim frequencies of 0.36 ± 0.10. Authors¹ of a previous epidemiology study in elite hurling reported 35 team injuries per year. Such figures are 97 times greater than the team claim frequencies we report. The proportion of players who sustained injuries and yet failed to meet claim-eligibility criteria is unknown. However, we could conclude that mild injuries do not merit medical attention or treatment. Therefore, the true financial cost of injury in the Gaelic games remains to be established. Given the burden injuries place on player welfare and organizational finances, investigations into team injury rates and medical costs are warranted. Particular attention should be devoted to players whose medical expenses are not covered under current claim-eligibility criteria.

Between 2007 and 2014, average annual adult claims were always greater than youth claims (6217.88 versus 1036.88). No longitudinal epidemiologic studies are available for subelite Gaelic games, making it difficult to interpret differences between youth and adult groups. However, the results may reflect greater adult playing demands and claims for loss of earnings. The proportion of adult claims noted here in Gaelic games (85.7%) is

comparable with data from rugby league players aged 20 years and over, who accounted for 83.3% of claims.¹³ Specifically, in a rugby cohort, the main groups claiming for injury were those 20–24 and 25–29 years old, who represented 29.6% and 24.7% of annual claim costs, respectively.¹³ Future Gaelic games researchers should stratify claims by age group, while discriminating among loss of earnings and costs for physiotherapy, imaging, and surgery, as this information was unavailable to us.

Greater playing demands during adult years should also be considered. For instance, injury incidence differed between inexperienced (<1 season) and experienced adult professional soccer players (5.2 versus 7.8 per 1000 hours, respectively).¹⁴ Inexperienced players have lower overall injury incidences but more stress-related bone injuries. However, match exposure (22 versus 41 seasonal hours) and training exposure (193 versus 209 seasonal hours) were lower for inexperienced soccer players. This highlights the need to monitor responses to imposed training and match loads throughout a player's career. Such longitudinal investigations should be conducted in Gaelic football and hurling cohorts.

From 2007–2014, Gaelic football claims were always greater than hurling claims (5395.38 versus 1859.38, respectively). No researchers, to our knowledge, have outlined seasonal training and match-play demands of either code, making it difficult to identify factors accounting for claim-frequency differences. However, noncontact and lower limb injuries are more prevalent in Gaelic football.^{1,2} Few investigators have examined training-intervention effectiveness in Gaelic games. Therefore, practitioners are limited when seeking best-practice guidelines and must synthesize information from other field sports. Future researchers should review the relationships between seasonal training loads and injury rates.

Lower limb injuries accounted for 60.0% of all claims during the 2007–2014 period. This percentage was relatively constant over the 8 years (60.55% in 2007 versus 60.56% in 2014). Previous authors^{2,4,15} have reported that lower limb injuries accounted for 71.1%, 76.0%, and 70.5% of all injuries in subelite Gaelic football, elite Gaelic football, and elite hurling, respectively. For instance, hamstrings injury prevalence in Gaelic football and hurling was 29.1% and 23.6%, respectively.³ In a review¹⁶ of 405 Gaelic football injury claims, 70% and 58% of all injuries involved lower limb structures in males and females, respectively. Injuries per 1000 exposure hours were 8.25 and 4.2 for males and females, respectively. This was

significantly lower than the 13.5 injuries per 1000 hours reported in subelite male Gaelic football players.⁴

We observed seasonal variations in the sites of lower limb injury claims (Table 3). However, poor reporting of injury-claim sites limited the analysis of specific affected structures. Injuries to the ACL were reported only for 2010–2012. Given the high recurrence and ongoing medical costs associated with such injuries, future researchers should investigate risk factors for lower limb injuries in Gaelic games.^{1,2,5,6,7}

Knee injuries accounted for 20.0% of 6855 claims in 2007 and 33.4% of 6283 claims in 2014. This equates to an increase of 13.3%, or 727 claims. Data were not available regarding the proportion of recurrent injuries, but recurrences in prospective studies^{1,2} accounted for 17.4% and 23% of all injuries in elite hurling and Gaelic football, respectively. Tracking such data in the future is important because previous injury is known to be a strong indicator of future injury.¹⁷ Structural, neuromuscular-inhibition, and strength deficits persist beyond return to play after common lower limb injuries.¹⁸ Implementing injury-prevention programs at young ages may reduce the risk and associated costs of new and recurrent injuries.

We found a significant correlation between annual claim expenses and lower limb injury claims ($r = 0.85$, $P = .01$), suggesting increased savings if lower limb injury rates are reduced. Considering the amateur status of the GAA and most sporting organizations, longitudinal reviews of injury claims may guide targeted injury-prevention programs to reduce the risk of severe injuries and associated medical costs.¹⁹

Total lower limb injury claims (65% versus 42%) and claim costs (59% versus 31%) differed in female and male rugby league players, respectively.²⁰ Compared with male collegiate teams, female teams had more claims, greater claim values, and more medical expenses per athlete.²¹ Female athletes appear to be more susceptible to certain exercise-related injuries.⁸ In a 5-year review of injury claims in underage soccer players, a nearly 2-fold greater prevalence of knee injuries for female players was seen when compared with male players (30% versus 16%).²² Injury rates also differed between New Zealand Divisions 2 (700/1000 playing hours) and 1 (266/1000 playing hours) rugby league players.¹³ We report Injury Scheme claims for male players only. Future researchers should investigate injury-claim trends in male and female GAA players at all competitive levels. Injury-surveillance databases have yet to be established for subelite populations in Gaelic games.

During 2004–2010, sport-related injuries treated in an Australian emergency department increased by 24%, with lower limb injuries increasing by 26%.²³ Thus, sports injuries can burden public medical centers and sporting organizations. Injury-prevention programs can reduce injury rates by 57% in elite football players.²⁴ However, only 67% of subelite Australian football players performed injury-prevention exercises correctly, which raises the question of whether protective effects are obtained by these athletes.²⁵ Injury-rate reductions are likely related to the duration of program compliance.²⁶

As previously stated, ours is the first attempt to review GAA injury claims over consecutive seasons, to our knowledge. Despite advancing our understanding of the financial implications of injury, this study had several

shortcomings. Specifically, we were unable to differentiate among age categories, new or recurrent injuries, injury severities, costs of various treatments, and whether ongoing treatment was required. Such limitations should be addressed by future researchers.

Officials must recognize the influence of organizational policy on identifying and responding to injury risk factors.²⁷ Published guidelines must be validated and continually updated to reflect changes in injury trends. Establishing a public injury index for elite and subelite teams may highlight the effectiveness of current programs. Injuries in Gaelic games result in significant time loss from sport.³ Programs aiming to maximize participation should integrate injury-prevention components to enable participants to “stay in play,” particularly after returning to play postinjury. Match unavailability due to injury was 14% for Union of European Football Associations Champions League teams during 2001–2012.²⁸ It is not surprising that lower limb injury rates and increased match availability were associated with higher team rankings in professional soccer.²⁹ Minimizing injury risk and time loss will likely enhance participation and performance. In addition to causing athletes to miss out on the obvious benefits of competitive success, failure to manage modifiable risk factors undermines the potential of team sports to contribute to recreational physical activity and health.³⁰

CONCLUSIONS

We reviewed GAA Injury Scheme claims from 2007–2014 for male elite and subelite players. Current funding models fail to account for annual injury-claim expenses and thus require significant GAA funding. Reducing lower limb injuries will likely reduce injury-claim expenses and player time loss. Effective injury interventions have been validated in soccer, but whether such changes can be replicated in Gaelic games remains to be investigated.

Greater claim frequencies were reported for Gaelic football and adult players. These injury-claim frequencies likely underestimate injury rates in Gaelic games due to eligibility criteria. Future reviews of Injury Scheme claims should differentiate between elite and subelite levels and male and female players and among age groups. Establishing injury-surveillance tools for subelite players while considering medical costs and risk factors could inform injury-prevention guidelines. Injury-claim data should be integrated into current elite injury-surveillance databases to monitor the cost effectiveness of current programs.

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