

# A pilot study examining injuries in elite gaelic footballers

F Cromwell, J Walsh, J Gormley

Trinity College School  
of Physiotherapy,  
Trinity Centre for the  
Health Sciences, St  
James's Hospital,  
James Street, Dublin 8,  
Republic of Ireland

Correspondence to:  
Dr J Gormley.

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## Abstract

**Objectives**—To quantify injuries in elite gaelic footballers and to determine the nature, sites, and outcome of injuries and the possible risk factors involved.

**Methods**—Information on injuries was collected from six elite gaelic football teams by a questionnaire. The footballers were asked to recall injuries over the preceding six month period.

**Results**—A total of 88 out of 107 subjects sustained injuries over the study period. Ninety five injuries were recorded, giving an incidence rate of 1.78 injuries per subject per year, of which 35% were recurring. It was found that 35% of injuries were sustained during training sessions. Lower body injuries predominated (77%), the

ankle being the most commonly injured anatomic site. Most injuries were soft tissue in nature: muscle, 33%; ligament, 32%; tendon, 16%. The most common situations giving rise to injuries were collision (22%) and twist/turn (19%). Foul play only accounted for about 6% of injuries. Mean time off play as a result of injury was 17.3 days, and hospital admission was necessary for 15% of the injuries.

**Conclusion**—Despite the limitations of a retrospective of this nature, the study provides useful and important information on injuries in gaelic footballers.

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Keywords: elite; gaelic football; injury

(Part A)

NOTE: FOR MULTIPLE CHOICE QUESTIONS PLEASE TICK CORRECT BOX

1. Age \_\_\_\_\_ Weight \_\_\_\_\_ Height \_\_\_\_\_
2. Are you participating in any sporting activity other than Gaelic Football more than two hours a week?  
Yes [ ] No [ ]  
If yes, please specify the sport \_\_\_\_\_
3. Have you been a member of the senior panel since January 1997?  
Yes [ ] No [ ]
4. How many times do you train per week?  
A. With your club? Once [ ] Twice [ ] Three times [ ] Four times [ ]  
B. With your county? Once [ ] Twice [ ] Three times [ ] Four times [ ]
5. How long does each training session last? (On average)  
A. With your club? 1 hour [ ] 1 1/2 hour [ ] 2 hours [ ] 2 1/2 hours [ ]  
B. With your county? 1 hour [ ] 1 1/2 hour [ ] 2 hours [ ] 2 1/2 hours [ ]
6. Does each session/competition involve a warm-up?  
A. With your club? Yes [ ] No [ ]  
B. With your county? Yes [ ] No [ ]  
  
If yes, please specify the average duration of warm-up  
A. With your club? \_\_\_\_\_  
B. With your county? \_\_\_\_\_
7. What protective equipment do you wear presently?  
(E.g. knee brace, ankle support, gum shield, etc.) \_\_\_\_\_
8. Which leg do you tend to kick the ball with?  
Right [ ] Left [ ] Either [ ]
9. Have you sustained an injury/injuries due to Gaelic football since January 1997?  
Yes [ ] No [ ]

IF YES, PLEASE FILL OUT ACCOMPANYING FORM/ FORMS PLEASE FILL OUT A SEPARATE FORM FOR EACH INJURY

Gaelic football is a field game consisting of two teams of 15 players in which a round ball may be caught and kicked from the hands or the ground and the ball is passed from one player to another by means of hand or foot. Tackling is performed in a number of ways—for example, the shoulder charge, which may be used to knock the ball from the opponent's grasp or to knock him to the ground to gain possession. The objective of the game is to score a goal below the crossbar or to score a point by kicking the ball above it. One of the main attractions of gaelic football is the speed at which it is played. This coupled with much physical contact, acceleration, deceleration, and turning is likely to result in a significant rate of injury in the game.<sup>1</sup> Despite the widespread popularity of the game in Ireland, gaelic football has largely escaped the attention of sports scientists. The paucity of investigation into injuries in gaelic football indicates the necessity for more detailed research in this area.

Studies examining injuries in gaelic football have mainly concentrated on the presentation of injuries in accident and emergency departments.<sup>2-4</sup> These studies provide information about the type of injuries sustained as a result of play but are strongly biased towards the more serious types of injury and those requiring surgery.<sup>5</sup> An examination of injuries over a seven month period in school gaelic football<sup>5</sup> has been undertaken, but no studies have specifically examined injuries in adult gaelic footballers at any level of competition.

All gaelic footballers play with their local club within a particular county. From these, about 28-30 of the most successful players are selected to train and play with their county. Ireland is divided into four provinces, and from the beginning of May in each province counties

(Part B)

PLEASE FILL OUT A SEPARATE SHEET FOR EACH INJURY

NOTE: FOR MULTIPLE CHOICE QUESTIONS PLEASE TICK CORRECT BOX

1. Where was the injury located?
 

Head [ ]	Elbow [ ]	Buttock [ ]
Mouth [ ]	Lower Arm [ ]	Groin [ ]
Eye [ ]	Wrist [ ]	Quadriceps [ ]
Nose [ ]	Hand [ ]	Hamstrings [ ]
Cheek bone [ ]	Finger [ ]	Knee [ ]
Jaw Bone [ ]	Chest/Ribs [ ]	Lower leg [ ]
Neck [ ]	Stomach [ ]	Ankle [ ]
Shoulder [ ]	Back [ ]	Foot [ ]
Upper Arm [ ]	Hip [ ]	Other _____

Which side was the injury located?  
Right [ ]      Left [ ]
  2. Which month did the injury occur in? \_\_\_\_\_
  3. When was the injury sustained?
 

Training [ ]	Warm-up [ ]	<b>Match:</b>
	Warm-down [ ]	1st Half [ ]
		2nd Half [ ]
  4. What was the nature of the injury?
 

Tendon Injury [ ]	Fracture/Break [ ]
Muscle [ ]	Bruise [ ]
Ligament sprain [ ]	Wound [ ]
Cartilage [ ]	Other _____
  5. What caused the injury?
 

Collision [ ]	Running [ ]
Tackle [ ]	Stumble/Fall [ ]
Foul Play [ ]	Twist/Turn [ ]
Contact with Ball [ ]	Kicking the Ball [ ]
Other _____	
  6. Do you feel that the condition of the pitch contributed to your injury?  
Yes [ ]      No [ ]  
If yes, what was the condition of the pitch?  
\_\_\_\_\_
  7. What happened as a result of your injury?  
Continued playing/training [ ]  
Discontinued playing/training [ ]  
  
If you continued, was your play affected by this injury?  
Yes [ ]      No [ ]
  8. Were you absent from training/competition due to your injury?  
Yes [ ]      No [ ]
  9. Did you require treatment for your injury?  
Yes [ ]      No [ ]  
  
If yes, who treated you?  
(Tick more than one box if appropriate)  
Physiotherapist [ ]      Doctor [ ]  
Sportsmasseur [ ]      Other \_\_\_\_\_
  10. Were you admitted to the hospital as a result of your injury?  
Yes [ ]      No [ ]
  11. Was this the recurrence of an old injury?  
Yes [ ]      No [ ]  
If yes, was Gaelic football the original cause of the injury?  
Yes [ ]      No [ ]
- ANY COMMENTS? \_\_\_\_\_

Figure 2 Part B of questionnaire on gaelic football injuries.

play against each other in a knockout competition. The winning county in each province qualifies for the All Ireland semifinals, and in late September the two winners of the semifinals compete in the All Ireland final. The players who are chosen for a particular county are regarded as the best or the elite in that particular county. As there have been no studies that have examined injuries at elite level in gaelic football, the aim of this study was to investigate injuries in elite gaelic footballers

during the six month period January to June 1997. During this period, counties are involved in a league competition until April, but the main focus is the upcoming provincial knock-out series.

### Methods

The study took the form of a retrospective analysis of injuries, information on which was gathered by the use of a specifically designed questionnaire divided into two sections, A and B. Part A (fig 1) consisted of questions on the personal and physical characteristics of the players, including details of age, weight, height, and participation in gaelic football. The level of commitment to gaelic football was ascertained by: (a) a question examining players' participation in other sports, for more than two hours a week to assess the proportion of players committed to gaelic football alone; (b) questions examining exposure to training, in terms of the number and duration of training sessions.

Other areas investigated included the duration of warm up, whether protective equipment was worn, and the leg used to kick the ball. Finally the subject was asked to indicate according to a yes/no choice whether an injury or injuries had been sustained as a result of gaelic football since January 1997. This final question in part A was structured as a filter-type approach, meaning that no further details were required from the subject if the answer was no to the above question. If the subject responded yes, he was required to complete the accompanying part B of the questionnaire (fig 2).

In part B, respondents were asked to supply information about the location, timing, cause, and nature of the injury. Further information was sought about whether the injury occurred during training or competitive matches and whether the condition of the pitch contributed to the injury. Whether the injury was a recurring one was also ascertained. Finally the consequences of the injury were investigated with regard to absenteeism from training or competition, the medical personnel, if any, involved in treating the injury, and whether the injury required hospital admission. The subjects were required to fill out a separate part B for each injury sustained since January 1997.

The total population of elite gaelic footballers is about 900 (28 players  $\times$  32 counties). The study undertaken during the month of July did not permit the whole population to participate, as a number of teams had already been eliminated from competition at this stage. So a smaller sample of subjects, the qualifying teams in the provincial finals, was chosen. It was originally expected that the eight provincial finalist teams would participate in the study, but two teams were unable to participate because of other commitments at the time.

The investigators made initial contact with the team managers of the provincial teams by telephone to ensure participation. Upon agreement, an introductory cover letter and the correct number of questionnaires were delivered to the team managers, stating clearly the

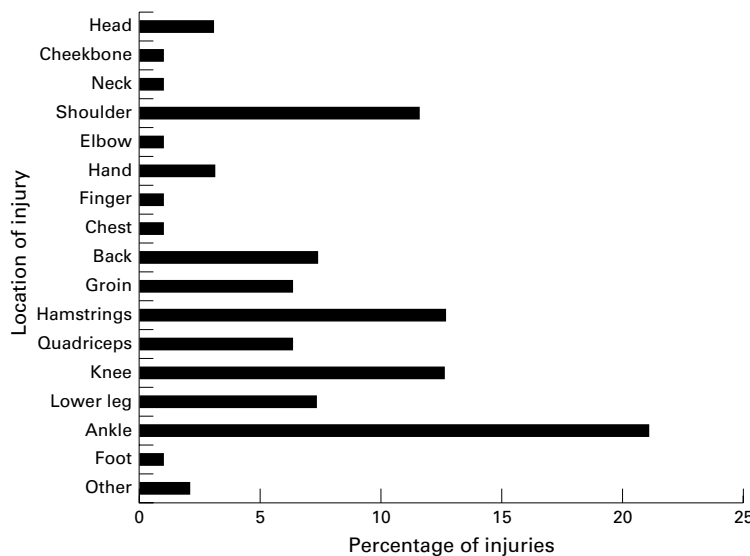


Figure 3 Location of injuries sustained by elite gaelic footballers ( $n = 95$ ).

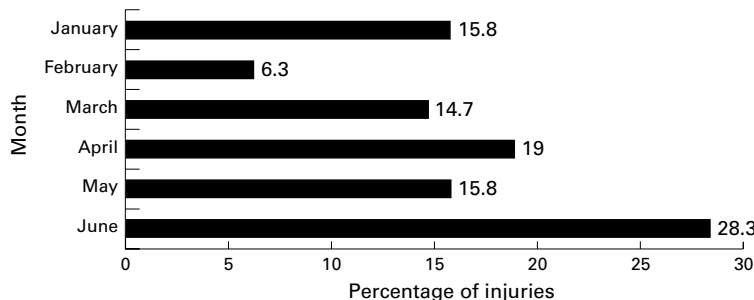


Figure 4 The month in which the gaelic football injury was sustained ( $n = 95$ ).

purposes of the study and instructions for completion of the questionnaire. In the cover letter was the definition of an injury as used in the study. The definition of an injury has a direct bearing on injuries reported, so the one used was "one sustained during training or competition resulting in restricted performance or time lost from play".<sup>6</sup> In the questionnaire it was stated that the injury had to be as a result of participating in gaelic football.

The questionnaire was compiled by the authors and piloted on 15 club footballers, and as a result of their suggestions minor modifications were made. The questionnaires were hand delivered to the individual teams and distributed to the players by the team managers. Twenty eight questionnaires were delivered to each participating team. Each questionnaire consisted of one part A and two accompanying part Bs. Extra copies of part B were supplied for subjects who sustained more than two injuries in the six month period. Two of the teams completed the questionnaires immediately. In the case of the other four teams, the management promised to collect and return the questionnaires, which they did after a reminder phone call.

All subjects were asked to complete a consent form ensuring anonymity and confidentiality of results obtained by the questionnaire. Assurance was guaranteed with regard to the collective analysis of data—that is, teams would be grouped collectively for the purposes

of data analysis and no reference would be made to individual teams.

## Results

A total of 168 questionnaires were administered, and 119 were returned, giving an overall response rate of 71%, representing a 11.8% sample of the total population of elite gaelic footballers. Twelve subjects were eliminated because they joined the county panel after January 1997. This left a subject pool of 107 players. The mean (SD) age of the subjects was 24.4 (3.5) years, their height was 181.8 (4.6) cm, and their weight was 81.5 (6.2) kg. Some 50% of the players kicked with their right leg, 16% with their left leg, and 34% kicked with either leg.

It was found that 77% solely played gaelic football, whereas the remaining 23% were involved in golf, soccer, hurling, basketball, rugby and badminton. The players spent on average 5.7 (95% confidence interval 4 to 8.4) hours training a week with the county team. The performance and duration of warm up was investigated, and 100% participation by the subjects for an average of 15 minutes was found. Investigation of protective equipment showed that the main items used were a gum shield (29%) and an ankle support (22%). Almost half of the subjects (49%) did not wear any protective equipment.

Some 82% of subjects reported injury or injuries in the period January to June 1997. In total, 135 injuries were reported, 40 of which were not included as they occurred outside the study period. The 95 remaining injuries represented an overall incidence of 0.89 injuries per player for six months or 1.78 injuries per player per calendar year. Lower body injuries accounted for 77%, with the upper limb accounting for the remaining 23% of the injuries. Figure 3 illustrates the location of the 95 injuries. The subjects were asked to record the side on which the injury occurred. With regard to the lower limb, 43% of injuries were concurrent with the ipsilateral kicking leg, whereas 28% were sustained on the contralateral side to the kicking side. However, 36% of subjects kicked the ball with either leg, rendering association between the above variables difficult.

Figure 4 shows the month in which the injury occurred. Most injuries were sustained during competitive play (62%) and were almost equally distributed between the first (29%) and second halves (33%) of the matches. Only 3% were received during warm up, and the remaining 35% of injuries were sustained during training sessions. Figures 5 and 6 show the nature and cause of injury respectively. The condition of the pitch as a contributing factor was also investigated, with 29% of subjects claiming that the pitch condition contributed to their injury. These subjects felt that the following pitch conditions contributed to the injuries sustained: dry/hard (43%), wet/soft (39%), and uneven (18%).

The severity, consequence, and treatment of injuries were ascertained. The consequence of injury was that 54% resulted in training or

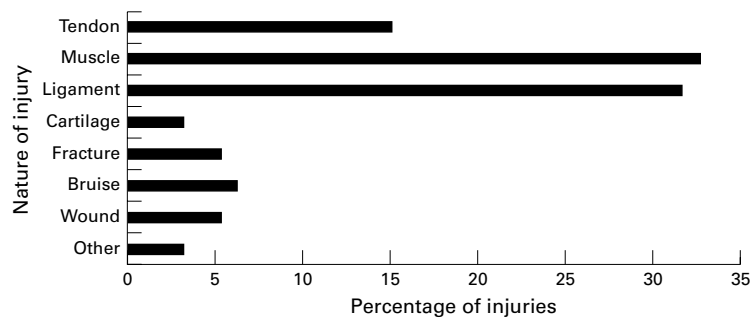


Figure 5 The nature of the gaelic football injuries ( $n = 95$ ).

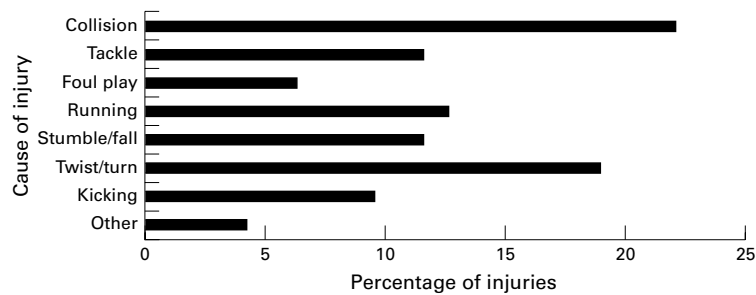


Figure 6 The causes of the injuries sustained in gaelic football ( $n = 95$ ).

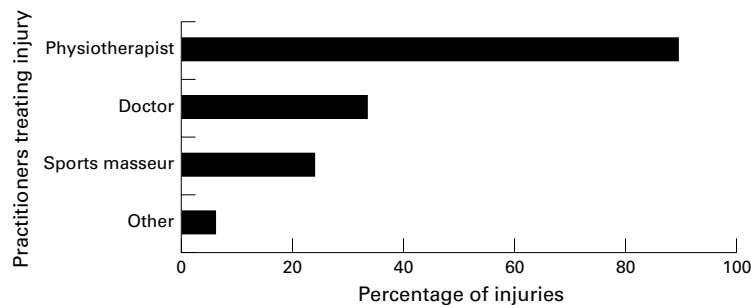


Figure 7 Personnel involved in treating gaelic football injuries ( $n = 95$ ).

competition being discontinued, and the remaining 46% continued to play, with 93% of these remaining injuries resulting in degradation of performance. Injury severity was classified according to absenteeism from play. Based on the classification system devised by Ekstrand and Gillquist,<sup>7</sup> injuries were considered to be of minor, moderate, or major severity depending on the time the participant was absent from training or competition. Minor injuries (seven days or less) accounted for 38% of injuries, moderate (8–27 days) accounted for 42% of injuries, and major (> 28 days) accounted for 20% of injuries. A mean value of absenteeism of 17.3 (13.6 to 20) days per six months or 34.6 days per year was recorded. Figure 7 shows the personnel involved in the treatment of injuries. The “other” 5% of practitioners were chiropractors, acupuncturists, and surgeons. Hospital admission was required for 15% of injuries.

The final section dealt with the proportion of injuries that were recurring: 35% of all injuries fell into this category. When asked whether gaelic football had been the original cause, 97% replied yes.

### Discussion

The study represents an 11.8% sample of elite gaelic footballers. The results show a high

commitment to gaelic football with an average of 5.7 hours a week spent training. An overall injury incidence rate of 1.78 injuries per subject per calendar year was calculated, which is similar to the value of 1.76 injuries per subject per year reported for contact sports (hurling, gaelic football, and soccer) played at a high level.<sup>6</sup> A mean value for absenteeism from competition as a result of injury was calculated as 34.5 days a year. Owing to the retrospective nature of the study, it was impossible to ascertain the time spent in competition and thus exposure time.

In this study, most injuries were sustained to the lower limb (69%). Watson<sup>6</sup> found that lower limb injuries were most common in contact sports. The probable explanation for the high incidence in gaelic football is the running, jumping, kicking, swerving, turning, and side stepping involved in the game. The most commonly injured anatomical site was the ankle (21%), which is different from the figure of 15.1% found for school gaelic footballers.<sup>5</sup>

Upper limb injuries were relatively low (17%), of which shoulder injuries predominated (12%). A possible explanation for the relatively high incidence of shoulder injuries is that the shoulder charge is permitted while tackling. Gaelic football also requires a large amount of upper body action, especially through high catching, lifting, and carrying the ball.<sup>8</sup> The least common sites of injury in this study were the hand and finger (4%) and the head, neck, and face (3%). The figure for hand and finger injuries is surprisingly low considering the extent of hand contact with the ball and opponents.

Injuries appeared to be related to the months when competitive matches were played. Some 28% of injuries occurred during the month of June, which may be attributable to the increased intensity of the competitive season at that time. Specifically 62% of injuries were received during matches, while 35% were received during training. The relatively high incidence sustained during training was unexpected, and this high level may raise questions about the type and nature of training. As noted above, the time spent in competition and thus exposure time was not determined. The figure of 35% of injuries sustained during training may reflect a larger amount of time spent training compared with the amount of time in competition.

Overall, soft tissue injuries predominated, as shown by injuries to muscle in 33% of injuries, ligament in 32%, and tendon in 16%. The least common injuries were the most serious types, including fractures (5%), a punctured lung, concussion, and a multitrauma injury (3%). The most common causes of injury were collision (22%) and twist/turn (19%). A relatively low rate of injury as the result of foul play (6%) was recorded. Contrary to media portrayal of gaelic football at this level, the small number of injuries attributed to foul play would suggest fair play from the players and stringent officiating by referees. A further item reported by players to be a contributing factor was the state of the pitch, which was thought to be a factor in 29% of injuries. If the state of the pitch is a fac-



tor, it is worrying that it contributes to almost 30% of injuries especially at this high level of competition.

Almost half (46%) of subjects continued to play despite incurring injury, but 93% of those who continued to play were restricted in their performance as a result. Bearing in mind the high level of participation of subjects, teams are especially sensitive to absenteeism during matches. Players at this level tend to tolerate discomfort through injury rather than jeopardise the competitiveness of their team or even lose their place on the team.<sup>6</sup>

About 98% of injuries required treatment, many of which were treated by more than one practitioner. Physiotherapists were the most common providers of attention to injuries, being involved in treatment of 89%. Despite the high level of injury treatment, 35% of injuries were of a recurrent nature.

There are a number of inherent disadvantages of a six month retrospective analysis. Firstly, the players may not have been able to recollect all the injuries they had sustained over this length of time. Furthermore players who sustained multiple injuries over the study time may have been discouraged from providing information on all injuries sustained, because of the requirement to complete a separate form for each injury sustained. Another point to note is that some of the less severe injuries may not have warranted treatment and therefore may not have been diagnosed by a medical professional. Such minor injuries were still considered for this study, and as they were self diagnosed this may have resulted in discrepancies about the nature of injury in some cases. Finally the injury incidence rate that was calculated is of limited use without accompanying data on competition exposure time.

#### CONCLUSION

Despite the limitations of this study, the results provide a useful insight into the nature, sites,

and outcome of injury in gaelic football at the highest level. It is the first study to exclusively examine such injuries. Lower limb injuries were found to predominate, with soft tissue injuries being the most common type. One third of injuries were sustained during training, which must be a cause for concern for coaches. The finding that 35% of injuries were of a recurrent nature is also a cause for concern.

Gaelic football is still an amateur game, but the level of commitment shown in terms of number of hours of training by the subjects in this study suggests a professional attitude to the game at this level. The information obtained from this study provides a platform for further research. The injury incidence rate in terms of competitive exposure time and training time should be determined. The professional support in terms of injury management from doctors and physiotherapist should also be examined to assess the availability of these professionals to players at this level.

Contributors: F C and J W were involved in the formulation of the project, the collection, analysis, and interpretation of the data, and contributed to the paper. J G initiated the idea, participated in the design, analysis, and interpretation of the data, and the supervision of the project. He was also responsible for writing and editing the paper.

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#### Take home message

Injuries in gaelic football at the elite level are predominantly soft tissue in nature, with the lower limb the main site of injury. One third of all injuries occur during training, but further research is required to quantify injury incidence in terms of competitive exposure time and training time.