

# Sports Injuries in School Gaelic Football: A Study Over One Season

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## Abstract

School football injuries were studied over the seven months of one season on 150 males aged  $16.94 \pm 0.82$  years. Training averaged  $4.13 \pm 1.47$  hours per week and matches  $1.84 \pm 0.60$  hours per week. Mean time injured was:  $0.51 \pm 1.7$  days in hospital,  $34.27 \pm 37.08$  days off sport and  $13.98 \pm 5.22$  days of restricted activity. There were 136 match and 63 training injuries giving 175.98 injuries per 10000 hours of matches and 31.06 injuries per 10000 hours of training. Injuries were treated as follows: hospital 83, general practitioners 51, physiotherapists 28, no treatment 38. The most common injuries were: ankle sprain (11.6% of the total), hamstring strain (6.5%), contusion (6.5%) back strain (6%) knee sprain (5.0%), finger sprain (5.0%), other muscle strains (5.0%), fracture of the wrist (5.0%), dislocation of the finger (4.5%), overuse injury of the back (4.0%), tenosynovitis (3.5%), fracture of the ankle (3.0%). Thirteen injuries were to goal-keepers, 85 to backs, 31 to mid-field players and 70 to forwards. In 34.83% of the injuries foul play was given as the major cause. This was followed by "Lack of fitness", "Poor kit or boots" and "Previous injury" (all 11.24%). The most common minor cause was "Poor state of the pitch" (17.42% of injuries).

## Introduction

There have been few previous studies of injuries in Gaelic football and none have specifically considered trauma in the game at school level. Earlier investigations into football injuries have tended to be examinations of hospital accident and emergency records<sup>1,2,3,4</sup>. Many of these analyses have suggested that sprains are the most common injury: strains, back problems and overuse injuries have not been considered problems in Gaelic football. However, it is well known that the injuries seen in hospital accident and emergency departments do not adequately reflect the totality of injuries in a particular sport, since they are strongly biased towards the more serious kinds of injury and those that require surgical repair. Two other studies have briefly considered football injuries in the context of school sports accidents as a whole<sup>5,6</sup>. But none of these investigations attempted to quantify the risk of injury in Gaelic football or to examine the causes of injury. The present paper is a report of the first study of the injuries occurring in school Gaelic football during the course of one school year.

## Subjects and Methods

Data concerning participation rates and sports injuries were collected over one season on 150 members of nine successful senior school football squads. Schools were recruited into the study because of personal contact with the researcher.

Data were collected over the seven month period that corresponded with the school football season. Respondents kept records of their participation in football and of the injuries that were sustained by them during training or competition. Data were recorded on specially designed forms by the subjects after the details of the survey had

been explained to them by the author or an assistant. The recording took place under the supervision of the football coach, who in all cases was a physical education graduate and had experience of the collection and analysis of sports injury data. The effect of each injury was recorded: if the condition resulted in restricted activity the nature of the restriction was noted.

Only injuries sustained by the subject during training for, or participation in, the game of Gaelic football were considered in this study. The majority of the subjects were involved at a competitive level only in football. Where this was not the case, injuries arising from participation in other activities were ignored.

The following information was collected on each subject:- age, level of participation, position played, number of years of experience of the game of Gaelic football, hours of training for football per week, hours of matches per week, the nature of any protective equipment used for football. The following information was collected with respect to each injury sustained: the type and site of the injury, days of hospitalisation (if any), days off from matches or training due to the injury, days of restricted performance due to the injury, the source of treatment received for the injury (if any), protective items used, the cause of the injury, weather conditions at the time of the injury, state of the pitch at the time of the injury, time after the start of the practice or match, time before the end of the practice or match, any other factor relevant to the injury.

The investigation was not restricted to injuries that required medical treatment or that prevented participation in football completely. It included injuries that restricted activity to any significant, specified, extent. The justification for this approach is given in full in Watson<sup>7</sup>.

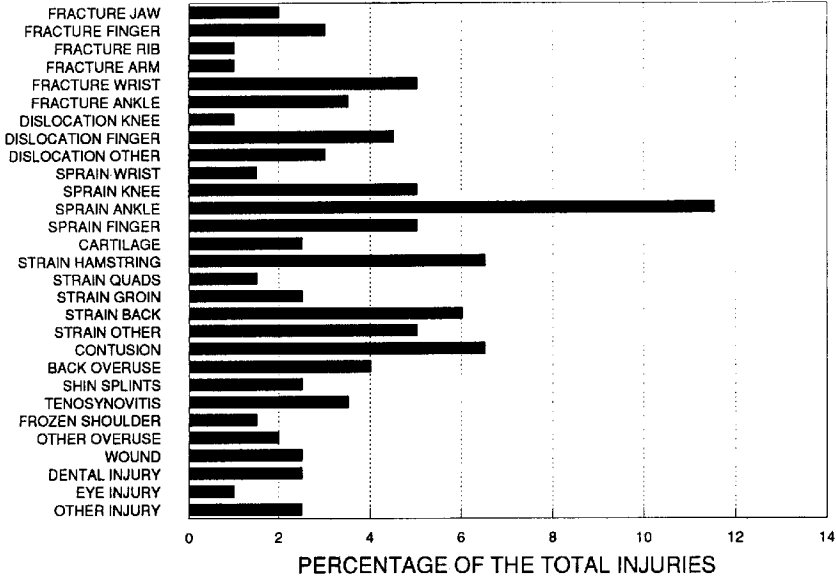


Figure 1 – Sports injuries sustained by 150 schoolboy Gaelic footballers over one season. The percentage contribution of each kind of injury to the total is shown on the axis at the bottom of the graph.

**Results**

The average age of the subjects was  $16.94 \pm 0.82$  years. During the seven month period of the study they spent a mean of  $4.13 \pm 1.47$  hours per week training and  $1.84 \pm 0.60$  hours per week in football matches.

The distribution of injuries is shown in Figure 1. The four most frequent injuries were: sprain of the ankle (11.6% of the total injuries recorded), strain of the hamstring muscle (6.5%), contusion (also 6.5%) and strain of the back (6%). Together these four injuries accounted for almost one third of the total injuries (30.6%). Other common injuries included:- knee sprain (5.0%), finger sprain (5.0%), other muscle strains (5.0%), fracture of the wrist (5.0%), dislocation of the finger (4.5%), overuse injury of the back (4.0%), tenosynovitis (3.5%) and fracture of the ankle (3.5%).

Figure 2 shows that 13 of the injuries were to goal keepers, 85 to backs, 31 to mid-field players and 70 to forwards.

The major and minor causes attributed to the injuries are shown in Figure 3. In just over one third of the injuries "Foul or illegal play by another player" was given as the major cause (62 of the injuries or 34.83% of the total). This was followed by "Lack of fitness", "Poor kit or boots" and "Previous injury" (all 20 injuries or 11.24 % of the total). The most common minor cause given was "Poor state of the pitch" (31 injuries or 17.42%). The state of the pitch was strongly, but not exclusively, influenced by the weather conditions at the time of the injury.

Eighty two of the injuries received hospital treatment,

51 were treated by general practitioners, 28 by registered physiotherapists and 38 injuries received no professional medical treatment (Figure 4). The more serious injuries, which required one or more days as a hospital in-patient, consisted of the following: fractures (20 cases), concussion (10 cases), meniscus injury (3 cases), dislocation (3 cases), injury to back (3 cases), eye injury (2 cases), other injury (5 cases). Ankle sprain, the most common injury, resulted in a mean of  $13.42 \pm 4.73$  days off sport and a further  $12.38 \pm 11.90$  days of restricted activity. This is slightly less than the mean time the subjects were affected by the other injuries reported in this study which resulted in  $25.83 \pm 24.34$  days off sport and  $10.54 \pm 12.54$  days of restricted activity. The subjects averaged 1.33 injuries over the 7 months of the study and during this period spent a mean of  $0.51 \pm 1.7$  days as a hospital in-patient,  $34.27 \pm 37.08$  days off sport and  $13.98 \pm 15.22$  days of restricted activity.

One hundred and thirty six of the 199 injuries occurred during competition and the other 63 happened during training. Since 4.83 hours were spent in training each week compared to 1.84 hours of matches it follows that the risk of injury is 175.98 injuries per 10000 hours of matches and 31.06 injuries per 10000 hours of training. In other words, the injury rate during matches is 5.6 times that during training. The mean rate is 71.04 injuries per 10000 hours of participation. When the injury rate is expressed as days of injury per 1000 hours of participation, the index is 260.71. Expressed another way, four man-hours of football participation results in about one man-day of injury.

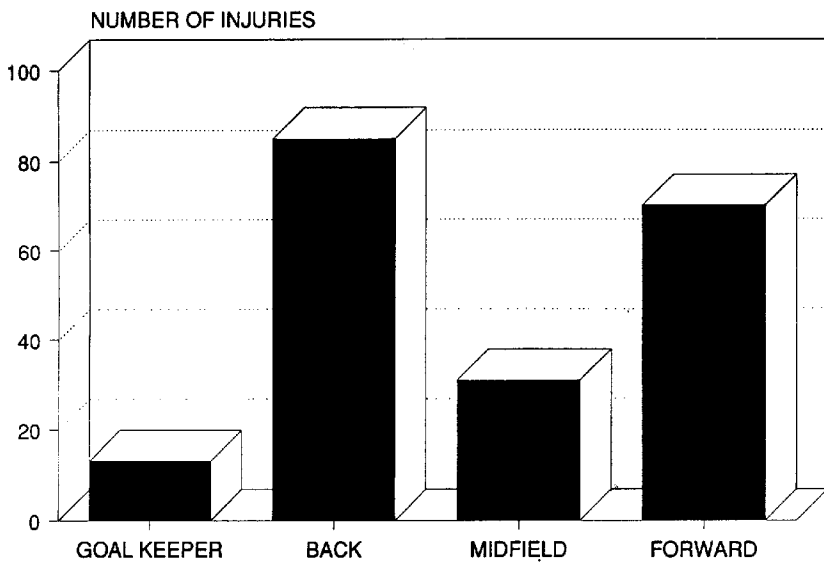


Figure 2 – The number of injuries sustained in four different playing positions.

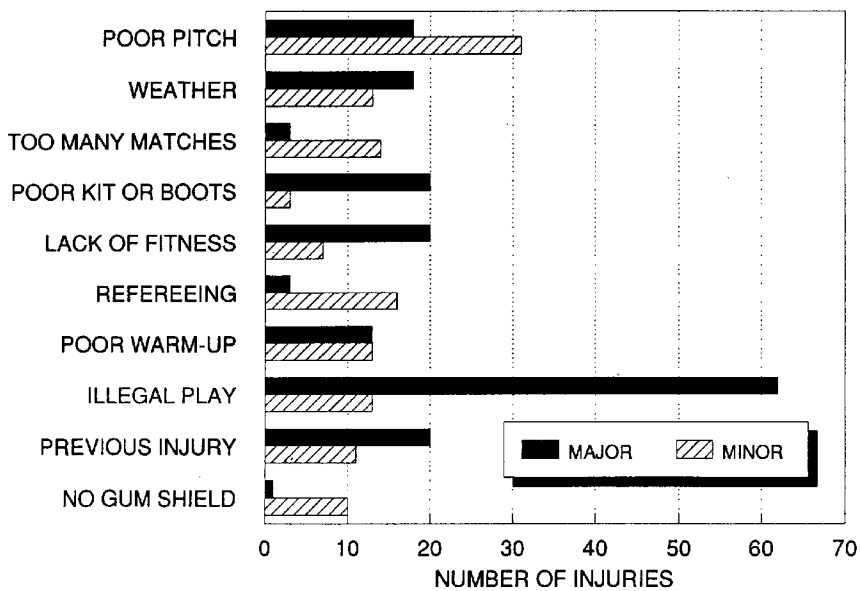


Figure 3 – Major and minor causes attributed to the injuries.

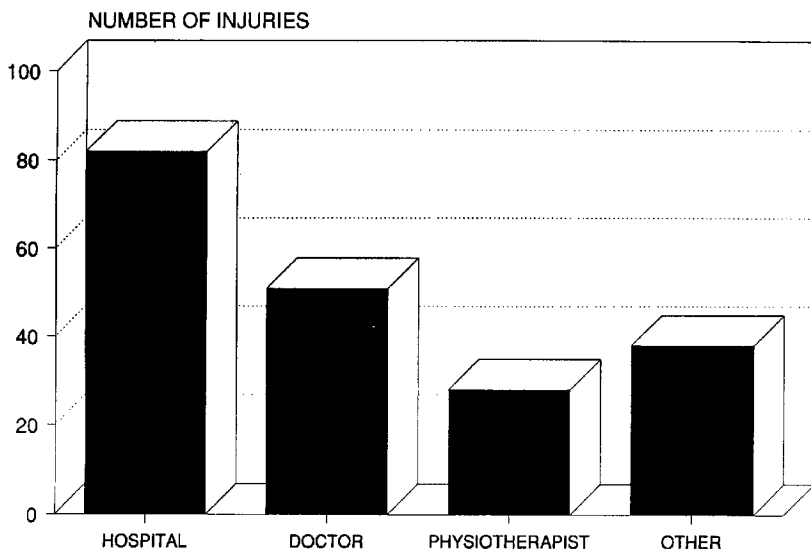


Figure 4 – The number of injuries treated: in hospital, by physicians in general practice, by physiotherapists and which received professional medical treatment.

No relationship was noted between type or site of injury and the following factors:- weather conditions, the protective items used by the subjects, the age or playing experience of the subjects, minutes after the start of the match, minutes before the end of the match. This does not necessarily mean that such relationships do not exist. However, a larger study, or one of a different design, would be required in order to detect them.

#### Discussion

The 150 schoolboy Gaelic footballers followed in this study sustained 199 football injuries over a seven month period - an average injury rate of 2.27 injuries per player over a 12 month period. This is similar to the 2.10 injuries per year reported for a cross-section of Irish sportsmen and sports women by Watson<sup>7</sup>. The total time that the school-footballers were affected by injury (48.64 days over a 7 month period or 83.47 days over a 12 month period) was significantly higher than the figure for the cross-section of Irish sports persons from the same study (51.78 days over a 12 month period). The ratio of "Days off sport" to "Days of restricted activity" was 71:29 for the present subjects as against 50:50 for the cross section of Irish sports persons. This analysis indicates that in comparison to the other Irish sports that have so far been examined, the incidence of injuries in school Gaelic football is high and the injuries are relatively serious. This suggestion is confirmed by the fact that over 41% of the injuries received hospital treatment.

The four most frequent injuries were: sprain of the ankle (11.6% of the total), strain of the hamstring muscle (6.5%),

contusion (also 6.5%) and strain of the back (6%). Together these four injuries accounted for almost one third of the total injuries (30.6%). Ankle sprain is the most common injury found in schools, both in Ireland<sup>5,6</sup> and abroad<sup>9,10</sup> so that the high incidence in schoolboy football is not unusual. Procedures recommended for the prevention of ankle injuries include: taping, the use of high topped boots, proprioceptive training of the ankle joint and better rehabilitation from previous injury<sup>11</sup>. The high incidence of ankle sprains found in the present subjects suggest that it would be desirable to investigate the effectiveness of such procedures in young Gaelic footballers.

Hamstring strains and back injuries are not traditionally associated with school Gaelic football but were found to be very common. Such injuries are attributed to poor levels of flexibility, poor posture and body mechanics and muscle imbalance<sup>12,13,14,15,16,17</sup>. In view of the high incidence of such injuries in the present group of subjects it seems necessary to encourage the introduction of better conditioning procedures for schoolboy Gaelic footballers; or better still, to conduct an evaluation of the effectiveness of such procedures in school Gaelic football. This conclusion seems to concur with the views of players and coaches since lack of fitness was cited as the second most common cause of injury in these subjects (20 injuries or 11.24% of the total injuries). Foul or illegal play was given as the most common cause (in more than one third of all injuries). This is a very high percentage and suggests that a much stricter enforcement of the rules is required. Incomplete recovery from a previous injury and defects

in the pitch were other factors frequently cited as the cause of injury.

The risk of injury per 10000 hours of participation (106.8 injuries per 10000 hours) is high in comparison with other school athletic activities where the risk is reported to be between 10 and 30 injuries per 10000 hours<sup>9,10,15</sup>. However, it is less than injury rates recorded in ice hockey<sup>18</sup>, high-school American football<sup>19</sup> and senior hurling (Watson, unpublished study). It has been argued that days of injury per 1000 hours of participation is a better measure of the problem of injuries in a particular sport than the number of injuries per 10000 hours Watson<sup>7</sup>. This is because recovery time - and therefore the disruption caused - varies considerably with different types of injury. The importance of this statistic has not been appreciated in the past but would be a valuable contribution to future studies of sports injuries carried out in this country.

The number of injuries that were attributed to foul play was considerably higher than those recorded in a recent Irish study into soccer and rugby trauma by Stokes and his colleagues<sup>4</sup>. It is the present author's view, and those of expert colleagues, that the play in Gaelic football is generally less tightly controlled than it is in rugby and soccer and that in Gaelic football the penalties for illegal play are generally less severe. However, reliance upon the opinions of players and coaches as to the cause of injury is not entirely satisfactory and in future studies the use of more objective criteria should be considered.

The type of activity being undertaken at the time of injury was not considered in the present study. Also the use made by players of various types of protective equipment was not examined in sufficient detail for any conclusions to be drawn. Both these matters are of interest and should be investigated in future research on football injuries. It would be better not to rely upon the recollections of players or coaches but to base the analysis on some kind of objective record such as video recordings of matches and training.

The results of the present study indicate that the incidence of injuries in school Gaelic football is high in relation to other activities and that the time loss from sport due to these injuries is considerable. These results suggest that some form of intervention should be undertaken to reduce the risk. This would be in line with initiatives already in progress in other European countries and in some other sports. Other results of the present investigation suggest that the most effective preventative measures might perhaps involve: (1) Stricter application of the rules in order to reduce the incidence of foul play. (2) Better conditioning programmes to improve posture, flexibility, joint stability and muscle balance in school-age Gaelic footballers. (3) Measures to improve the stability and strength of the ankle joint. (4) More effective

rehabilitation from previous injury. (5) Greater attention to the state of pitches, particularly in bad weather.

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