A Comparison of Gaelic Football Injuries in Males and Females in Primary Care

J Crowley, J Jordan, E Falvey
South West Specialist Training Scheme in General Practice

Abstract
The Ladies Gaelic Football Association has a playing population of 150,000 of which 33% are adults. A number of studies have been published on rates of injury among male athletes but none on female athletes in Gaelic football. A retrospective review of insurance claims, submitted under the Gaelic Athletic Association Player Insurance Injury Scheme. 405 injuries were recorded, 248 [107 (70%) male, 141 (58%) female] to the lower limb, 91 [33 (21%) male, 58 (23%) female] to the upper limb. The majority of lower limb injuries [56 (52%) male, 56 (40%) female] were to muscle. Almost a third of upper limb injuries were fractures [10 (30.3%) male, 33 (57%) female]. Injuries/1000 hours playing was 8.25 for men and 2.4 for women. The injury rate in ladies Gaelic football was found to be significantly lower than in mens Gaelic Football. Lower limb injuries accounted for the majority of injuries in both sports.

Introduction
Ladies and mens Gaelic football comprise two of Irelands national sports. Each team consists of 15 players and each game lasts 60 minutes divided into two halves. All games are played outdoors on natural grass surfaces. The playing field is 150m in length and 100m wide. Gaelic football uses a standard football and the player is permitted to catch and kick the ball. Minor variation in rules exist between the two sports. Both sports are contact sports it is therefore not surprising that injuries are a factor. We chose to review injuries presenting at source by studying the Ladies Gaelic Football Player Injury Insurance Scheme. By approaching injuries in this manner we also account for those which would not necessarily present to a secondary or tertiary centre. Our objectives included: to compare the injury rate of injury in both sports, to highlight any variations in injury pattern which may exist between the two sports, to determine whether injury occurrence is more common in the training or match setting.

Methods
This study accumulated data from the playing district of County Cork. The clubs were specifically chosen from geographically different areas, namely urban, sub-urban and rural areas. This study compiled injury data over the course of one full season (2008). This study was a retrospective review of all insurance claims forms submitted under both the Ladies Gaelic Football Player Injury Insurance Scheme and the G.A.A. Players Injury Insurance Scheme for one full season. The existence of these schemes allows accurate reporting of all injuries requiring medical treatment for both ladies and mens Gaelic football respectively. Researchers contacted the member of each club responsible for insurance data collection, claims, and re-imbursement. The records provided by each club included a copy of the Players Injury Scheme insurance application as well as any medical reports and/or receipts from the various sources of treatment providers. Each players insurance application form was completed and signed by the Club Physician. All data was anonymised prior to review and data entry.

In order to compare this data with mens Gaelic football related injuries published literature on the subject was reviewed. A total of three published papers filled our criteria for comparison. Substantial cohort size and studies which focused on injuries presenting to the primary care setting were the two most important inclusion criteria. No published data on ladies Gaelic football exists. Data was compiled anonymised and analysed using Microsoft Excel (Microsoft Inc, Seattle, Washington State), and SPSS V17 (Statistical Package for the Social Sciences), (SPSS Inc, Chicago, Illinois) program. Ethical approval was secured from the Clinical Research Ethics Committee of the Cork Teaching Hospitals.

Results
Injury Type: Men's Gaelic Football
160 injuries recorded, 107 (70%) to the lower limb, 33 (21%) to the upper limb with 15 to head, neck and trunk, and 5 dental injuries. The majority of lower limb injuries (52%) were to muscle, while almost a third of upper limb injuries were fractures (30.3%). The most common lower limb muscle injury involved the hamstring 14 (25%), also common was ankle miscellaneous injury (ligament, tendon, connective tissue) 10 (17%). The anterior cruciate and/or collateral ligament injuries accounted for 8 (14%) of lower limb injuries. The most common upper limb injury was soft tissue injury, with 10 (30%) of muscle injuries involving the deltoid. In total, 8 (24%) dental injuries were seen.

Injury Type: Ladies Gaelic Football
Two hundred and forty five injuries were recorded, of which 141 (58%) involved the lower limb, 58 (24%) injuries involved the upper limb, with 46 (18%) injuries involving the head, neck and trunk. The over use injury was found to be prominent in the game with 61 injuries recorded occurring amongst 26 players. Of all injuries recorded, 57 (40%) were muscular in nature, 46 (19%) were fractures, while 102 (41%) were miscellaneous injuries (ligament, tendon, connective tissue). The most common lower limb injury involved the knee, 46 (33%), also common was muscular injury involving the hamstring 28 (20%), while 28 (20%) of lower limb injuries involved the ankle. 8 anterior cruciate ligament injuries were recorded (6% of all lower limb injuries). The most common upper limb injury was fracture 33 (57%) with the first four digits accounting for the majority of fractures 21 (64%). Injuries to joints accounted for 43% of all injuries (N=106). Of these joint injuries, 49 (46%) involved the knee, 10 (10%) shoulder injuries, 28 (26%) involving the ankle, 14 (13%) to the wrist, while other joint injuries accounted for 5% of all joint injuries.

Injury rate
An injury rate of 8.25 injuries per 1000 playing hours was seen in mens Gaelic football.
An injury rate of 2.4 injuries per 1000 playing hours was seen in Ladies Gaelic football.
Treatment: Ladies Gaelic Football

As per figure 2, the various modalities of treatments employed for the different sites of injury are represented. The majority of all injuries recorded (N=245) were managed by a chartered physiotherapist (125 [51%]), a medical doctor provided care in nearly a quarter of cases [N=66 (27%)], while 54 (27%) injuries were treated by a manual therapist. (Note: manual therapist defined as any physical therapist, acupuncturist, chiropractor, or osteopath). Table 1 outlines modality of treatment, number of visits to care provider and total cost of treatment with reference to site of injury. Seventy injuries (29%) required 0-2 visits to a care provider, 97 (39%) required 2-5 visits to a care provider, while greater than five visits were needed for 78 (32%) of the injuries recorded. 36 (15%) injuries were treated for less than 100, the majority of injuries (N=179 (73%)) were treated for a value of between 100 and 500, 19 (8%) injuries cost between 500 and 1000 to treat, while only 11 (4%) of injuries cost greater than 1000 to treat.

Activity

Almost all [N=155 (97%)] of mens Gaelic football injuries were during practice. Female injuries were more evenly distributed between matches [N=135 (55%)] and training [N=110 (45%)].

Discussion

An injury rate in mens Gaelic football of 8.25 injuries per 1,000 hours of playing was calculated. This injury rate was found to be significantly higher than the female rate (2.4 injuries per 1,000 hours of playing). However, the injury rate which we calculated for mens Gaelic football was found to be lower than in two previous mens Gaelic football studies which reported injury rates / 1000 hours playing time of 13.5 and 11.8 respectively 1,2. Lower limb injuries were the most common, representing 70% (N=107) of all injuries recorded in men. Similarly, lower limb injuries were the most common, representing 58% (N=141) of all injuries recorded in women. This finding correlates well with a prospective study of injury profiles amongst elite male Gaelic footballers where it was shown that lower limb injuries also predominated, however with a higher incidence (77%) 3. 71.1% of all mens Gaelic football injuries recorded in another study was also lower limb in nature.

In men, the most common lower limb injury was ankle miscellaneous injury (ligament, tendon, connective tissue) [N=18 (17%)], while the most common lower limb muscle injury involved the hamstring [N=14 (25%)]. In contrast, the most common lower limb female injury we recorded involved the knee (N=46, 33% of all lower limb injuries). Muscular injury involving the hamstring (N=28, 50% of all lower limb muscular injuries) accounted for a far greater percentage of lower limb muscular injuries than in the male group. The high incidence of ankle injury which we recorded amongst the male group correlates well with our previous mens Gaelic football studies which showed ankle injury to be the most common type of injury presenting 1,3. The most common upper limb injury in men was soft tissue injury, with 30% (N=10) of muscle injuries involving the deltidoid. In contrast, the most common upper limb injury amongst the female group recorded was fracture (57% of all upper limb injuries, N=33), with the first four digits accounting for the majority 64% (N=21). In ladies Gaelic football, match-related injuries accounted for 55% (N=135) of claims with training related claims accounting for the remaining 45% (N=110), while almost all (N=155 (97%)) of male injuries occurred in training.

Several methodological limitations may be present in our work: the absence of an epidemiological database of injuries in Ladies Gaelic football made interpretation of these results difficult. Here, we have provided the groundwork for the establishment of such a database. The existence of inter-club training differences proves a challenge to the researchers. As seen in the results, the majority of injuries take place on the training ground. The high numbers of male training injuries may reflect sample bias. This may be due to the requirement of any match injury to be reported in the referees match report, which is often difficult to obtain following the event. In reality this may represent an significant over labeling of injury occurring in training versus matches. Numerous modalities of treatment were employed in the rehabilitation pathway of Gaelic players who sustained injury. Medical doctors (primary care, orthopaedic, dental), chartered physiotherapists, manual therapists (manual therapy, osteopathy, acupuncture, chiropractic) all played an important role in both diagnosis and treatment. Currently an unregulated system exists in the sport with regard to injury reporting and treatment plans. A defined injury treatment pathway protocol is required. This will lead to earlier correct diagnosis, correct treatment pathway, less time spent absent from sport and decreased cost to both player and the Association.

This is the first study of its kind which looks at ladies Gaelic football injuries presenting at source. Furthermore, it is the first study to collect data injury data in ladies Gaelic football and adds greatly to our understanding of female injuries in the sport. Similarly, there is a paucity of studies reporting injuries in mens Gaelic football. This study helps address this deficit and is the first study to directly compare the injury profiles that occur in ladies and men’s Gaelic football. This study has also highlighted the significant incidence of serious injury associated with Gaelic football, provides accurate and worthwhile information with regards to injury incidence and injury pattern and is the first of its kind to focus exclusively on Gaelic football injuries presenting to the primary care setting.

Acknowledgements

Dr Fionnuala Quigley for providing relevant research and valuable advice. The School of Medicine, University College
Cork and the Cork Ladies Gaelic Football County Board who agreed to endorse this research opportunity. This project would not have been possible only for the excellent record keeping and efficiency of Ms. Bridget O’Brien, Assistant Secretary of the Cork Ladies Gaelic Football County Board. HSE South librarian Jane Farrelly for her assistance.

Correspondence: J Crowley
South West Specialist Training Scheme in General Practice, Institute of Technology, Tralee, Co Kerry
Email: johncrowley100@hotmail.com

References