ORIGINAL ARTICLE

Injuries in amateur horse racing (point to point racing) in Great Britain and Ireland during 1993–2006

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Br J Sports Med 2007;41:162–166. doi: 10.1136/bjsm.2006.033894

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Accepted 20 November 2006
Published Online First
29 November 2006

Objectives: To provide a breakdown of injury incidence from amateur jump racing (also known as point to point racing) in Great Britain and Ireland during 1993–2006 and to compare the injury epidemiology with professional horse racing in Great Britain, Ireland and France.

Design: Retrospective review.

Setting: Great Britain and Ireland.

Participants: Amateur jockeys.

Main outcome measures: Injury rates.

Results: Injury data suggest that point to point racing is more dangerous from an injury point of view than professional jump racing, which has previously been shown to be more dangerous than flat racing. Amateur jockeys have more falls than their professional counterparts, and this in turn puts them at greater risk of sustaining more serious injuries.

Conclusions: Amateur (point to point) jockeys represent a sporting population that previously has been little studied. They represent a group at high risk of injury, and hence formal injury surveillance tracking and counter measures for injury prevention are recommended.

Horse racing is the most popular spectator sport throughout the world. In Great Britain, spectator numbers top five million annually, and major individual races like the Kentucky Derby in the US and the Melbourne Cup in Australia have television audiences estimated at over 500 million.

In addition to professional horse racing, the various modes of amateur and recreational horse racing have high participation rates as well.¹

This paper is designed to provide a breakdown of injury incidence from amateur jump racing (also known as point to point racing) in Great Britain and Ireland during 1993–2006 and to compare the injury epidemiology with professional horse racing in Great Britain, Ireland and France.^{2–3} Comparison with professional racing will highlight the added risks inherent in point to point racing.

Historical background

Point to point racing is steeple chasing for amateurs, and was originated by huntsmen who raced their hunters from one church steeple to another, hence the name “point to point steeple chasing”. The earliest recorded race occurred in Cork, Ireland, in 1752, and the first recorded official meet in Great Britain dates back to 1836.

In the beginning, local huntsmen organised and ran their own races. It was only in 1913 when the Master of Hounds Point-to-Point Association was established in Great Britain that a general set of rules was introduced. The governing body of point to point racing changed hands a number of times during the 20th century, with the National Hunt Committee gaining control in the mid 1930s, before The Jockey Club took over in the late 1960s. A number of rule changes have occurred since that time, with the most important change occurring in 1976 when female riders were allowed to ride on equal terms with male jockeys. In Ireland, point to point racing is under the jurisdiction of The Irish National Hunt Steeplechase Committee, which is overseen by The Turf Club.

Point to point racing

Racing takes place in Great Britain during a limited season from January to June, although this will change from 2006 to

start in December. Racing is restricted to weekends and public holidays, whereas in Ireland the season runs from October till the end of May.

In Great Britain, there are about 200 point to point fixtures annually (2660 fixtures between 1993 and 2006), but in 2001 an outbreak of foot and mouth disease curtailed the season and only 30 fixtures took place.

Races vary in distance from 2.5 to 4 miles, with a minimum of 10 fences to be jumped, and most races involve racing over farmland rather than formal racetracks. The steeplechase fences are usually made of birch and must have a minimum height of 4 ft 4 in.

Professional jump racing is similar in the sense that it too involves jumping over obstacles as part of the course, although unlike point to point racing the races occur at formal racetracks and the obstacles can be either hurdle or steeplechase fences which can also vary in height and type. Professional jockeys usually start race riding between the ages of 16 and 18 years, and are known as “conditional” riders. They become fully professional in their 20s, and usually retire when they reach the age of 40.²

The surfaces are essentially the same in all the countries on both point to point racing grounds and formal racetracks. It is prepared grass that is kept short either through mowing by the groundsmen or through the aid of grazing animals. The surface will not affect the severity of any injury experienced by the jockeys.

The horses

Most racehorses weigh around 450 kg and are capable of reaching speeds of over 50 km/h. When sitting on a saddle, a jockey is about 2 m above ground, with the distance between the rider's head and the ground being 3 m.⁴ As horse racing involves two different species functioning together as a team, with the horse being able to act autonomously and unpredictably, the jockey can sustain injuries in numerous ways, from falling to being hit or kicked or even bitten by the horse.

Abbreviation: LOC, loss of consciousness

Table 1 Injury statistics

	Rides	Falls	Falls/rides (%)	Total injuries
Point to point racing 1993–2006				
Great Britain	168 822	21 497	12.73	3917
Ireland	101 735	14 592	14.34	1260
Total	270 557	36 089	13.34	5177
Professional jump racing 1991–2001				
Great Britain	257 904	17 454	6.77	3142
Ireland	144 508	6849	4.74	883
France	224 819	20 538	9.14	2675
Total	627 231	44 841	7.15	6700

This review includes all injuries to jockeys during the course of a day's racing, not just those that occur between the start and finish of a race. Jockeys are at risk from the moment they come into contact with the horse in the paddock until they have dismounted and moved out of reach of the horse. About 30% of injuries occur outside the actual races.²

Point to point jockeys

In Great Britain, all amateur jockeys must be aged ≥ 16 years; >65% of the jockeys are between the ages of 20 and 40 years. Although there is no upper age limit, most jockeys retire when they reach 50 years of age, although a few continue to ride into their 60s. There is a sex bias, with about 60% of the jockeys being male. The minimum riding weight of the jockeys is 12 stone (about 76 kg).

All jockeys need proper documentation from their respective licensing authorities. In Great Britain, annual license applications have steadily decreased over the 14-year period of review (a 37.7% decrease from 1465 applicants in 1993 to 912 applicants in 2006). The average number of applicants is 1118 per annum.

Medical care of jockeys

The Jockey Club and The Irish Turf Club closely regulate racing in Great Britain and Ireland, respectively. The protocol regarding medical care of jockeys is the same for both amateur and professional jockeys, and has been previously outlined by Turner *et al.*²

All jockeys are required to wear protective helmets to the European Standard EN 1384.1996, which must be securely fastened at all times. This standard became compulsory in Great Britain and Ireland in 1996.

Since 2001, all jockeys are required to wear a body protector to the European Standard EN 13158.2000. They have been required to wear body protectors since 1986, but there was considerable variety in construction before the adoption of the European Standard.

The Jockey Club introduced a standardised concussion management programme in October 2003, which requires all jockeys to undergo baseline testing, the results of which are then compared with those after concussion. This is in accordance with approved concussion management guidelines.⁵ Before 2003, the severity of concussion was graded on the basis of loss of consciousness (LOC), with jockeys having transient LOC incurring a 2-day suspension, and those with an LOC of <1 min and >1 min being suspended for 6 and 20 days, respectively. This protocol is still used in Ireland.

METHODS

The relevant literature was searched through Medline. Keywords used in the searches included horse racing, sports injuries, jockeys, equestrian injuries, concussion and head injury, resulting in 37 hits that were relevant.

The injury data were provided by The Jockey Club (for UK statistics) and the Irish Turf Club (for the Irish statistics), and is based on the medical evaluation of every injury sustained at certified meets.

The injury definition used in this study is important as it is different from other injury epidemiology studies, where injuries are defined according to the time away from work or sport. As amateur jockeys may race only once a season, for the purpose of this study, injuries were defined as those recorded in writing by the medical officer. In the case of multiple injuries, each injury was registered separately. As the injury data were collected only on race days, injuries that may have occurred during training have not been taken into account.

Because of the differing starting times of the racing seasons in UK and Ireland, for the purposes of this paper, the year given will denote the year in which the season ended (eg, 2002/2003 season referred to as 2003).

RESULTS

This analysis of injury data from Great Britain and Ireland involves a review of 270 557 rides, 36 089 falls and 5177 injuries. Tables 1 and 2 show the injury epidemiology and

Table 2 Injury rates

	Injury incidence per ride (%)	Injury incidence per fall (%)
Point to point racing 1993–2006		
Great Britain	2.32	18.22
Ireland	1.24	8.63
Professional jump racing 1991–2001		
Great Britain	1.22	18.00
Ireland	0.61	12.89
France	1.19	13.02

Table 3 Fall statistics

	Rides between falls (n)	Rides that result in a fall (%)	Injury incidence per fall (%)
Point to point racing 1993–2006			
Great Britain	7.85	12.73	18.22
Ireland	6.97	14.34	8.63
Professional jump racing 1991–2001			
Great Britain	14.78	6.77	18.00
Ireland	21.10	4.74	12.89
France	10.95	9.14	13.02

Table 4 Injury epidemiology in point to point racing 1993–2006

	Great Britain		Ireland	
	Injuries (n)	Injury rate (%)	Injuries (n)	Injury rate (%)
Soft tissue	2355	60.12	590	46.83
Dislocations	126	3.22	39	3.10
Fractures	732	18.69	411	32.62
Concussion	702	17.92	219	17.38
Fatalities	2	0.05	1	0.08

incidence rates for point to point racing, and for professional jump racing which has been documented previously.³

There are significant differences in the injury incidence between the two countries. In point to point racing, Irish jockeys fall more often than their British counterparts. But, overall, British jockeys experience the most number of injuries, as they sustain more injuries per fall (table 2).

Professional jockeys tend to have fewer falls than their amateur counterparts (table 3). This is to be expected as, presumably, professional jockeys are more skilled at riding than amateur jockeys, and professional jockeys should have access to better horses. But it is of concern that amateur jockeys fall 2–3 times more than their professional colleagues, as this in turn means that amateur jockeys sustain more injuries.

Common injuries

The most common injuries, overall, were soft-tissue injuries (table 4). They include muscle contusions, ligament sprains and muscle strains, and can occur anywhere in the body. Unfortunately, more serious injuries, such as anterior cruciate ligament ruptures and ruptured spleen, are also categorised under this broad definition, and this might lead to them being overlooked in the broader scheme of things. Because of variations in the reporting mechanisms between Great Britain and Ireland, it is likely that soft-tissue injuries are under-reported in Ireland.

Soft-tissue injuries make up a greater proportion of the injuries experienced by professional jockeys (table 5). But as amateur jockeys sustain more injuries overall, they experience soft-tissue injuries more frequently (table 6).

Point to point racing and professional jump racing in Great Britain both have a similar number of injuries per fall (18.22% v 18.00%; table 3). Table 7 shows that there are considerably more dislocations, fractures and concussions in point to point racing in comparison to professional jump racing in Great Britain.

Whereas all injuries occur more frequently in point to point racing, serious injuries occur 2–3 times more often than in professional racing (table 6).

Table 5 Soft-tissue injuries

	Injuries (n)	Injury rate (%)
Point to point racing 1993–2006		
Great Britain	2355	60.12
Ireland	590	46.83
Professional jump racing 1991–2001		
Great Britain	2573	81.90
Ireland	487	55.20
France	784	29.30

Dislocations

This category of injury is likely to have great variation between countries and even between individual observers. This is because it includes dislocation of the acromioclavicular joint, which is a common injury in jump racing, but is often ignored when reporting shoulder injuries. 75% of dislocations occur to the acromioclavicular joint and 20% to the shoulder joint, with most of the remaining dislocations occurring at the digits, hips and elbow. Amateur jockeys have dislocations >3 times as often as their professional counterparts (table 6).

Fractures

Fracture rates in point to point racing are similar in both Great Britain and Ireland, although they are three times higher than fracture rates in professional jump racing in their own countries (table 6). This may be because of the increased number of falls that amateur jockeys experience, as fractures constitute a similar percentage of falls in both forms of racing in both countries (table 7). This is expected, as this is an injury that is unlikely to be under-reported due to the nature of the injury and the effectiveness of the diagnostic tools available.

Table 8 compares the distribution of fractures throughout the body. Most fractures occur at the clavicle and upper limb (72% in Great Britain and 74% in Ireland), figures that are very similar to those seen in professional jump racing (71%).³ Amateur jockeys experience more clavicle fractures and less upper limb fractures than professional jockeys.

Concussion

Concussion was a relatively common injury in this survey period. Surprisingly, amateur jockeys in Great Britain had concussions almost twice as often as jockeys in Ireland (table 6). Amateur jockeys were much more likely to have concussion than their professional counterparts, with a concussion rate >3 times higher in Great Britain and more than double in Ireland (table 6). This phenomenon may be attributed to the higher fall rate seen in amateur racing or to the vagaries of the doctors diagnosing this condition without a formal protocol.

Table 9 compares the severity of concussion experienced by the jockeys using the old grading system that has been

Table 6 Injuries per 100 000 rides

	Point to point racing 1993–2006		Professional jump racing 1991–2001		
	Great Britain	Ireland	Great Britain	Ireland	France
Soft tissue	1394.96	579.94	997.77	337.29	348.62
Dislocations	74.63	38.33	20.2	11.7	73.9
Fractures	433.59	403.99	169.8	159.9	603.2
Concussion	415.82	215.27	125.6	99.5	163.0

Table 7 Injuries as a percentage of total falls

	Point to point racing 1993–2006		Professional jump racing 1991–2001		
	Great Britain	Ireland	Great Britain	Ireland	France
Soft tissue	10.96	4.04	14.74	7.12	3.82
Dislocations	0.59	0.27	0.30	0.25	0.81
Fractures	3.41	2.82	2.51	3.37	6.60
Concussion	3.27	1.50	1.80	2.10	1.8

described above. Nearly identical results are seen across the two forms of racing in the two countries, which is to be expected.

Fatalities

Fatal injuries were extremely uncommon in point to point racing during 1993–2006. There were only two deaths in Great Britain and one death in Ireland during that period. Because of the low numbers of fatal injuries in this time period, where available, a more extensive review of past data has been conducted. As on any given race day a jockey may take between 1 and 14 rides, the Jockey Club expresses its figures in per 100 million rides.

Fatality rates for point to point racing in Great Britain are almost triple that of professional jump racing (table 10). As only limited data were available for point to point racing in Ireland, the fatality rate may not be a true reflection of the actual rate. French fatality rates are much higher for an unknown reason.³

DISCUSSION

In this study, there are some striking differences in injury rates between amateur and professional jump racing. The most significant difference is the fact that amateur jockeys fall 2–3 times more often than their professional counterparts (table 1). This in turn means that they experience almost twice as many injuries (table 2). Considering that amateur jockeys seem to sustain less soft-tissue injuries relative to other injuries than professional jockeys (table 5), it can be concluded that they experience serious injuries more often than professional jockeys (tables 6 and 7). This is reflected by the higher incidence of such injuries.

There is a paucity of prospective injury epidemiological studies in the literature on both professional and amateur horse racing. This is surprising given the high media and public interest in horse racing as a spectator sport. Many papers have been written on recreational equestrian participation and paediatric equestrian injuries rather than horse racing.^{1–10} Most reports are case studies of serious injuries rather than injury epidemiology, which originate from emergency or

specialist units at hospitals.^{1–8 11 12} Only a few studies on professional horse racing have been published.^{2 3 12–14} Studies in amateur horse racing are almost non-existent.¹²

Most studies agree that soft-tissue injuries are the most common type of injury experienced by horse riders at all levels of participation, followed by fractures and then concussion.^{1–3} But as the reporting procedure for soft-tissue injuries varies from country to country, and given that these are usually relatively minor injuries, they are often overlooked, and many studies report very low incidence of such injuries.¹⁴ Doctors in Great Britain are required to record all injuries no matter how trivial, whereas this is not the case in Ireland or France.

Fractures can be easily identified, and occur at a similar rate and have a similar anatomical distribution in Great Britain and Ireland (tables 6 and 8). However, in amateur horse racing, fractures occur three times more frequently than in professional horse racing. This is probably due to the increased number of falls that amateur jockeys experience.

Horse racing has a high incidence of head injuries. In the last few decades, the number of head injuries has dropped dramatically from 40–50% of all injuries in the late 1970s^{7–9 12} to 15–20% in the past decade,^{7 9 13 14} due to the development of protective head gear. But it still has the highest incidence of concussive injury for any sport world wide.¹⁵

Amateur jockeys have twice as many concussions in Great Britain than they do in Ireland, whereas professional jockeys have similar concussion rates in both countries. Overall, amateur jockeys experience concussions three times more often than their professional counterparts (table 6). This phenomenon may be attributed to the higher fall rate seen in amateur racing. The distribution of severity of the concussive injuries using the crude surrogate measure of time off racing is nearly identical across the four groups (table 9).

Fatal injuries make up a tiny proportion of all injuries in horse racing.¹ Previously published studies have shown that the incidence of horse racing deaths in professional horse racing in Great Britain is far in excess of that occurring in other sports.² Given that caveat, it is surprising that in Great Britain point to point racing has a fatality rate that is almost triple that of professional jump racing. The reason for this is unknown, but may in part reflect differences in skill levels of jockeys resulting in more falls or differences in medical care organisation.

Table 8 Distribution of fractures (%)

	Point to point racing 1993–2006		Professional jump racing	
	Great Britain	Ireland	Great Britain 1993–2003	Ireland 1992–2004
Clavicle	52.32	54.74	44.40	42.37
Upper limb	19.54	19.71	29.22	26.48
Lower limb	12.16	13.14	11.57	11.53
Chest/torso	3.96	3.16	5.69	5.30
Head/neck/spine	12.02	9.25	9.11	14.33

Table 9 Concussion grading

	Point to point racing (%)		Professional jump racing (%)	
	Great Britain 1993–2003	Ireland 1993–2006	Great Britain 1993–2003	Ireland 1992–2004
2 day	44.33	40.18	48.43	32.57
6 day	32.67	32.42	29.58	37.16
20 day	23.00	27.40	21.99	30.28

Table 10 Fatality rates

	Point to point racing		Professional jump racing	
	Great Britain 1975–2005	Ireland 1993–2006	Great Britain 1975–2000	France 1980–2001
Fatalities	6	1	5	11
Rides	366 079	101 735	773 511	489 788
Fatality rate per 100 million rides	1639.0	982.9	646.4	2245.9

What is already known on this topic

Unlike professional horse racing, injury rates in amateur jockeys have not been studied prospectively.

What this study adds

This study analyses UK and Irish amateur (point to point) jockey injury data during 1993–2006, and finds that injury rates markedly exceed those seen in both professional jumps and flat horse racing. The reasons for this are unclear, but may relate to the different skill levels of participants.

CONCLUSION

Horse racing is an exciting sport with a high risk of injury. Injury data suggest that point to point racing is more dangerous from an injury point of view than professional jump racing, which has previously been shown to be more dangerous than flat racing.^{2–3} Amateur jockeys have more falls than their professional counterparts, and this in turn puts them at greater risk of having more serious injuries.

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Competing interests: None declared.

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