

Analysis of Greyhound Racing Injuries

1 October-31 December 2018

Overview

This report is prepared by the Chief Veterinary Officer of the Greyhound Welfare and Integrity Commission and details greyhound injuries and fatalities that occurred at race meetings in New South Wales from 1 October to 31 December 2018. The information is compiled from OzChase OneGov, and race injury data recorded by the Commission's On Track Veterinarians (OTVs).

The Greyhound Welfare and Integrity Commission (the Commission) assumed regulatory functions in relation to greyhound racing on 1 July 2018. The period 1 October-31 December 2018 is the second quarter of injury reporting following transfer of functions. During the quarter the Commission supervised 294 greyhound race meetings consisting of 2,885 races and 20,743 greyhound starts. A total of 3989 individual greyhounds started in races over this period, with an average of 5.2 starts per greyhound.

The Commission's On-Track Veterinarians attend all race meetings, and in this quarter conducted 1346 post-race examinations of greyhounds from which 52% (702 greyhounds) were found to have injuries¹. No injury was detected in the remaining 48% (644 greyhounds) which were examined by OTVs.

Reasons for veterinary examination included: Stewards' request due to sub-optimal performance; a racing incident (race collision or marring); a race fall; failure to finish a race; examination at trainer's request; and OTV-initiated.

All greyhounds injured at the race track receive immediate veterinary treatment from OTVs, and trainers may be directed by the OTV to seek follow-up treatment for a greyhound from a private veterinarian.

There are many causes of injuries in racing greyhounds, and the relative importance and interactions of causative factors are poorly understood. Causative factors can be divided into:

1. Greyhound factors: genetics, nutrition, physical growth and development, fitness, race preparation and previous injury history;
2. Track factors: design and surface characteristics;
3. Race factors: race distance, racing incidents and number of greyhounds in a race.

¹ Where an individual greyhound sustains injuries in more than one injury category, only the highest category is used in reporting.

Injury classification

Injuries are classified according to the number of days 'incapacitation' or stand-down from racing required to recover from the injury diagnosed at the time of examination. This provides an indication of the severity of an injury. The injury classification used by the Commission's OTVs is detailed in Table 1.

Table 1: Injury classification and examples of injuries

Injury category	Incapacitation period (days)	Example of injury
Minor I	0	No stand down needed: torn nail or minor abrasion or spike.
Minor II	1-10	Minor cuts, abrasions, pad injuries, Grade 1 muscle injuries requiring treatment.
Medium	14-21	Moderate cuts and pad/toe injuries, joint sprains, ligament or tendon injuries, Grade 2 muscle injuries.
Major I	28-42	Fractured toes, severe split pads, dislocated joints, simple fractures, Grade 3 muscle injuries.
Major II	43-90	Long bone fractures; severe spinal, pelvic or skull injuries; major fracture dislocations, Achilles tendon ruptures.
Catastrophic		Euthanased or sudden death.

Prior to the Commission assuming regulatory oversight of greyhound racing on 1 July 2018, OTVs employed by Greyhound Racing NSW classified all injuries requiring an incapacitation period of 28-90 days as major. Separating this category into major I (28 to 42 days) and major II (43 to 90 days) improves understanding of the nature and extent of major injuries. Some injuries - such as fractured toes and split paw webbing - may not be serious in nature but will require an incapacitation period of 28 days and thus be classified as major injury, due to the length of time the greyhound should be rested to allow the injury to heal fully before racing again.

All serious injuries that are career-ending and may require significant rehabilitation and/or surgery will attract an incapacitation time of more than 42 days; such injuries can be differentiated as major II for follow-up.

Injuries this quarter

Injuries are reported by OTVs and entered into an injury database managed by the Faculty of Engineering and Information Technology at the University of Technology Sydney (UTS). The injury data includes a description of the greyhound; the track, race distance, box and

race number where the injury occurred; the anatomical location and nature of the injury; the incapacitation time applied; the location on the track where the event occurred; and all treatment information. This information also contributes to research into track design, safety and injury prevention being conducted by UTS.

Injuries reported during the quarter are shown in Table 2. Injury rates are reported both as injuries per 100 greyhounds raced (where each greyhound will be counted only once irrespective of how many times it raced), and injuries per 1000 starts (where greyhounds are counted every time they race within the quarter).

Table 2: Injury numbers and rates in the 1 October-31 December 2018 period (Q4 2018)

Injury category	Incapacitation period (days)	Number of greyhounds injured	Injuries per 100 greyhounds raced	Injuries per 1,000 starts
Minor I	0	43	1.1%	2.1
Minor II	1-10	270	6.8%	13.0
Medium	14-21	215	5.4%	10.4
Major I	28-42	111	2.8%	5.4
Major II	43-90	43	1.1%	2.1
Catastrophic	Euthanased/died	20	0.5%	1.0
Total		702	17.6%	33.8

The major II injury rate indicates that 1.1% of greyhounds sustained a serious injury which is likely to be career-ending or require further surgery and/or rehabilitation, or may be life threatening; such injuries occurred at a rate of 2.1 per 1,000 starts. Catastrophic injuries occurred in 0.5% of greyhounds racing during the quarter, at a rate of 1.0 per 1,000 starts.

Injury trends in 2018

The total injury rates in the fourth quarter of 2018 (33.8 per 1000 starts) was higher than the second and third quarters (31.0 and 29.5 per 1000 starts), but comparable to the first quarter (33.9 per 1000 starts) (Table 3), consistent with environmental effects of hot weather on racing surfaces in quarters 1 and 4.

The rate of catastrophic injuries in the fourth quarter (1.0 per 1000 starts) was lower than all previous 2018 quarters (1.1-1.9 per 1000 starts), but this was offset by a higher major II injury rate of 2.1 per 1000 starts, compared to 0.6 – 0.8 per 1000 starts in the other quarters of 2018 (Table 3).

Table 3: Greyhound injury numbers and rates in 2018

Injury category	Quarter 1 injuries ¹			Quarter 2 injuries ¹			Quarter 3 injuries ²			Quarter 4 injuries ²		
	Number	Per 100 raced	Per 1000 starts	Number	Per 100 raced	Per 1000 starts	Number	Per 100 raced	Per 1000 starts	Number	Per 100 raced	Per 1000 starts
Minor I	48	1.0	2.4	95	2.2	4.1	63	1.5	2.7	43	1.1	2.1
Minor II	234	5.2	12	251	5.8	10.8	244	5.8	10.6	270	6.8	13.0
Medium	235	5.2	12	218	5.0	9.4	210	5.0	9.2	215	5.4	10.4
Major I + II	109	2.4	5.6	127	2.9	5.5	132	3.1	5.7	154	3.9	7.4
Major I							111	2.8	5.2	111	2.8	5.4
Major II							11	0.3	0.6	43	1.1	2.1
Catastrophic	37	0.8	1.9	31	0.7	1.5	26	0.6	1.1	20	0.5	1.0
Total	663		33.9	722	-	31.0	675	16.0	29.5	702	17.6	33.8

¹GRNSW data: Quarter 1 - 1 Jan - 31 March 2018; Quarter 2 - 1 April - 30 June 2018.

²GWIC data: Quarter 3 - 1 July - 30 Sept 2018; Quarter 4 - 1 October - 31 December 2018.

Long-term trends

Trends in injury rates since the start of 2016 are shown in Figures 1 and 2.

The 2018 year shows an average higher rate of total injury (32.1 greyhounds per 1000 starts) than does 2017 (26.7 greyhounds per 1000 starts) and 2016 (25.4 greyhounds per 1000 starts). This upward trend is predominantly due to an increase in minor II, medium and major injuries (Figure 2). Minor II injuries have increased from an average of 7.9 per 1000 starts in the first 18 months (2016 Q1 - 2017 Q2) to an average of 10.9 per 1000 starts in the recent 18 months (2017 Q3 - 2018 Q4); medium injuries have increased from an average of 8.1 per 1000 starts in the first 18 months to an average of 10.1 per 1000 starts in the recent 18 months; and major injuries have increased from an average of 4.2 per 1000 starts in the first 18 months to an average of 5.7 per 1000 starts in the recent 18 months.

The 2018 year shows the same seasonal patterns of higher injury rates in the hotter months (quarters 1 and 4, Figure 1) as does 2017. Seasonal patterns in injury rates will be investigated further to ascertain what role heat and moisture content in race tracks may play.

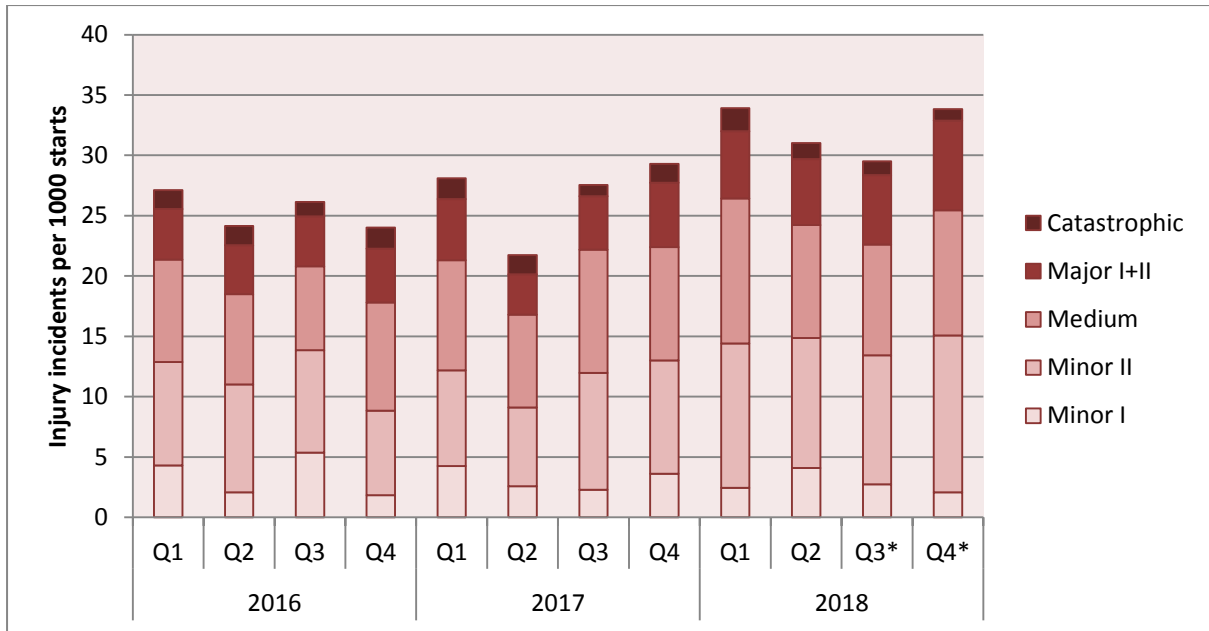


Figure 1: Injury trends by year quarters since 2016

*Data before Q3 2018 is from GRNSW reports available at <http://www.grnsw.com.au/welfare/veterinary/injury-report>

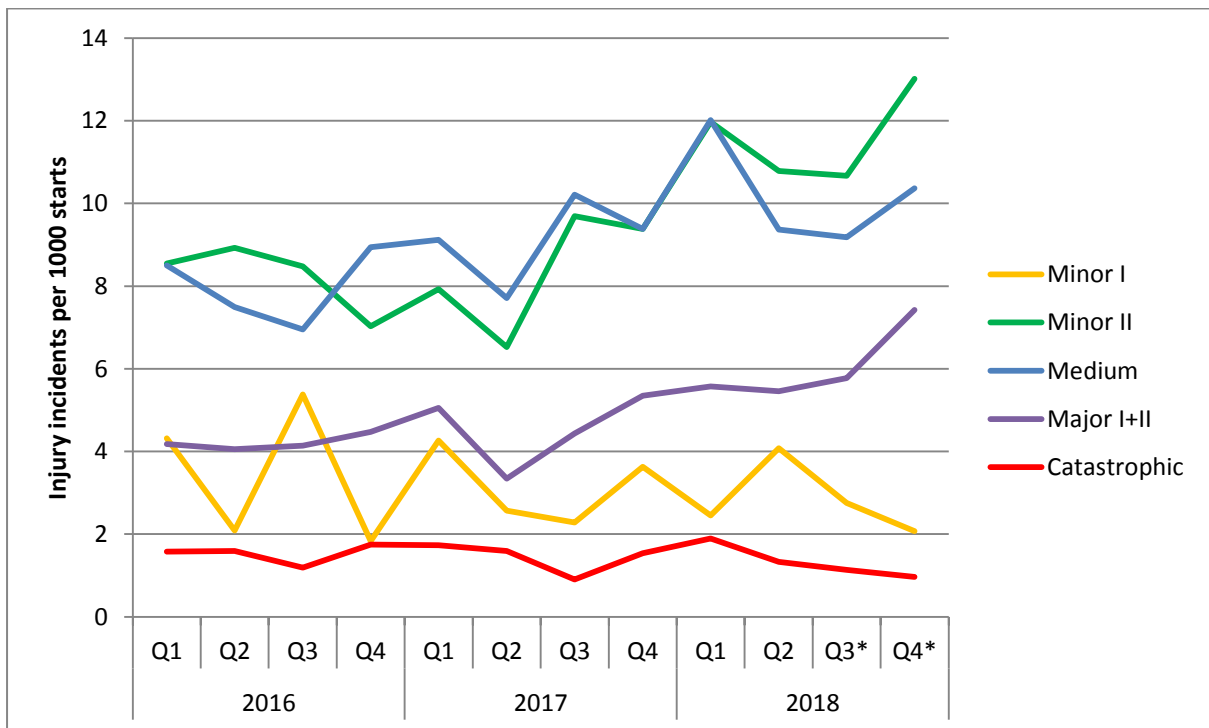


Figure 2: Trends in injury category by year quarters since 2016

*Data before Q3 2018 is from GRNSW reports available at <http://www.grnsw.com.au/welfare/veterinary/injury-report>

Major injuries

The largest proportion of injuries in this quarter are minor I and II (44.6% of all injuries), followed by medium (30.6%), major I (15.8%), major II (6.1%) and catastrophic (2.8%).

Injuries which required incapacitation of 21 days or less (minor I + minor II + medium) made up 75.2% of fourth quarter injuries, compared to 77-78% in other quarters of 2018.

Injuries which were likely to be career-ending, require further surgery and/or rehabilitation, or be life threatening, result in sudden death or require immediate euthanasia (major II + catastrophic) were 9% of all injuries in the fourth quarter, compared to 5.9% in the third quarter.

The increase in major injuries (7.4 per 1000 starts) this quarter can be attributed to the combined effects of the lower catastrophic injury rate, resulting in an increase in major II injuries; greater consistency and accuracy of injury reporting due to enhanced injury reporting systems and training of OTVs; and other factors which will be the subject of future analysis.

The 2018 calendar year shows similar proportions of less serious injuries (incapacitation of 21 days or less) and more serious injuries to 2017 and 2016 (Table 4).

Table 4: Comparison of greyhound injuries over three calendar years by severity

	Calendar year		
	2016	2017	2018
Minor I + II + medium injuries	77%	78%	77%
Major I + II + catastrophic injuries	23%	22%	23%

Fatalities

A fatality is defined as a greyhound which is euthanased at a race meeting as a result of an injury sustained during the meeting, or any sudden death occurring during the race meeting.

Of the twenty greyhound fatalities occurred at race meetings in NSW during this quarter, all were euthanased as a result of catastrophic injuries sustained during racing. There were no instances of sudden death reported during this quarter. Fifteen fatalities occurred during TAB race meetings and five during non-TAB race meetings.

The fatality rate for this quarter represents 1.0 per 1000 race starts, similar to the previous quarter (1.1 per 1000 starts).

Ten greyhounds were reported as having been euthanased by a private veterinarian as a result of an injury on track, after the OTV referred the greyhound for further diagnostics and treatment.

Three greyhounds were reported as having been euthanased as a result of injuries sustained during unofficial club trials. There was also one reported sudden death during unofficial club trials during this quarter. These were not included in the total of catastrophic

injuries reported above. An additional four greyhounds were reported as having sustained major injuries during unofficial club trials during this quarter.

Injuries by anatomical location

Consistent with the previous quarter, the majority of injuries (57%) were to the right hind and right forelegs (Figure 3).

Injuries to the right limbs are more common than left limb injuries as a result of greater forces on the right or outside limbs in races conducted in an anti-clockwise direction. The camber of the track, width of the turns and traction provided by the surface will all play a role in the forces operating on the outside limbs of competing greyhounds. Equally, the speed the greyhound is travelling; the centripetal force or amount of 'lean' into the corner; as well as the weight of the greyhound and the gravitational forces all account for the total forces in the right hind limb. Any bump or uneven movement of this limb when a greyhound is running at high speed can cause a bone injury, due to the significant forces involved.

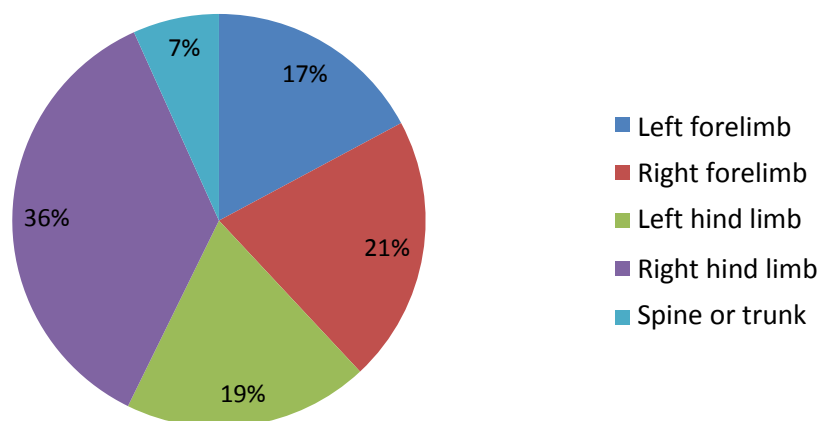


Figure 3: All injuries by anatomical location in quarter 4, 2018

The most common major II injuries were hock fractures (26 occurrences) and gracilis muscle injuries (13 occurrences), with the remaining injuries being a foreleg fracture, a ligament rupture, and foot fractures.

Conclusion

The Commission is committed to working to reduce the incidence and severity of greyhound injuries, and to the transparent and accurate reporting of injuries. Initiatives undertaken by the Commission include:

- Establishing a Race Injury Review Panel which will meet monthly to analyse all catastrophic and major II injuries in racing greyhounds that have occurred in the previous month, and gather information in order to inform track safety and other regulatory initiatives;

- Gaining the support of the Greyhound Industry Animal Welfare Committee to provide advice and oversight of a range of injury-related information, including a review of the scientific literature on greyhound injury;
- Agreement through the greyhound industry Measurement and Reporting Working Group to compile a comprehensive data set, in conjunction with GRNSW, for multi-factorial analysis of injury causes and correlations.

The Commission continues to work with Greyhound Racing NSW on track safety reform projects. The Commission provides injury data directly to the University of Technology Sydney (UTS) in order to inform their Track Safety and Design Study, which aims to improve understanding of the track-related aspects of racing injuries.