Analysis of Greyhound Racing Injuries
1 January 2019 – 31 March 2019

Executive summary

Each quarter, the Commission publishes a report of racing-related injuries to ensure a transparent and accurate reporting of injury sustained by greyhounds while racing.

The report for the January-to-March 2019 quarter shows an increase in total injury rates in comparison with the previous quarter (October-to-December 2018), as well as a slight increase on the corresponding January-to-March 2018 quarter.

The Commission is committed to reducing the incidence and severity of greyhound injuries. Various policies, programs and other measures are in place or will be introduced to deliver this outcome.

This report is prepared by the Commission's Chief Veterinary Officer and details greyhound injuries and fatalities that occurred at race meetings in New South Wales from 1 January to 31 March 2019. The information is compiled from relevant business systems (OzChase, OneGov) and race injury data recorded by the Commission's On-Track Veterinarians (OTVs).

The Commission assumed regulatory functions in relation to greyhound racing on 1 July 2018. The period 1 January - 31 March 2019 is the third quarter of injury reporting following transfer of functions from Greyhound Racing NSW (GRNSW) on 1 July 2018.

During the quarter, the Commission supervised 236 greyhound race meetings consisting of 2353 races and 17,520 greyhound starts. A total of 3701 individual greyhounds started in races over this period, with an average of 4.7 starts per greyhound.

The Commission's OTVs attend race meetings, and in this quarter conducted 1267 post-race examinations of greyhounds from which 52% (657 greyhounds) were found to have injuries[1], the majority of which were minor to medium. No injury was detected in the remaining 48% (610 greyhounds).

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

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 racetrack receive immediate veterinary treatment from an OTV, and trainers may be directed by the OTV to seek follow-up treatment for a greyhound from a veterinarian in private practice.

There are many causes of injuries in racing greyhounds, and the relative importance and interactions of causative factors vary. 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.

These factors are being studied further in order to inform injury prevention strategies and ultimately minimise the number of injuries sustained by racing greyhounds.

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 21-90 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 may 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 a greyhound is counted every time it races within the quarter).

Table 2: Injury numbers and rates 1 January – 31 March 2019 (Q1 2019)

Injury category	Incapacitation period (days)	Number of greyhounds injured	Percentage of greyhounds injured per injury category	Cumulative total per injury category	Injuries per 100 greyhounds raced	Injuries per 1,000 starts
Minor I	0	58	8.8%	8.8%	1.6%	3.3
Minor II	1-10	242	36.8%	45.6%	6.5%	13.8
Medium	14-21	205	31.2%	76.8%	5.5%	11.7
Major I	28-42	92	14%	90.8%	2.5%	5.3
Major II	43-90	28	4.3%	95.1%	0.8%	1.6
Catastrophic	Euthanased/died	32	4.9%	100%	0.9%	1.8
Total		657	100%	100%	17.8%	37.5

Injury trends over five quarters

The total injury rate in this quarter (37.5 per 1000 starts) is the highest of the last five quarters (Table 3), although much of this increase is in the minor I, minor II and medium categories, which are less serious injuries from which a greyhound is likely to fully recover and race again within a 3-week period.

The major I and major II injuries, or more serious injuries which require further treatment and rehabilitation or surgery or to be career-ending or life-threatening, decreased this quarter in comparison to quarter 4 2018.

The rate of catastrophic injuries in quarter 1 of 2019 (1.8 per 1000 starts) was slightly lower than the rate of catastrophic injuries in quarter 1 of 2018, and higher than other quarters of 2018. This pattern of higher rates of injury and of serious injury in the first quarter of the year may be a pattern consistent with environmental effects of hot weather on racing surfaces in summer. The Commission's Race Injury Review Panel, which meets regularly to review and analyse contributing factors to racing-related injuries, considers environmental factors such as these in its deliberations.

Table 3: Greyhound injury numbers and rates over 15 months

	Quarter 1 2018[1]			Quarter 2 2018[1]			Quarter 3 2018[2]			Quarter 4 2018[2]			**Quarter 1 2019[2]**		
Injury category	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	**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	**58**	**1.6%**	**3.3**
Minor II	234	5.2	12	251	5.8	10.8	244	5.8	10.6	270	6.8	13.0	**242**	**6.5%**	**13.8**
Medium	235	5.2	12	218	5.0	9.4	210	5.0	9.2	215	5.4	10.4	**205**	**5.5%**	**11.7**
Major I + II	109	2.4	5.6	127	2.9	5.5	132	3.1	5.7	154	3.9	7.4	**120**	**3.2**	**6.8**
Major I							111	2.8	5.2	111	2.8	5.4	**92**	**2.5**	**5.3**
Major II							11	0.3	0.6	43	1.1	2.1	**28**	**0.8**	**1.6**
Catastrophic	37	0.8	1.9	31	0.7	1.5	26	0.6	1.1	20	0.5	1.0	**32**	**0.9%**	**1.8**
Total	663	-	33.9	722	-	31.0	675	16.0	29.5	702	17.6	33.8	**657**	**17.8%**	**37.5**

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

[2]GWIC data: Quarter 3 - 1 July - 30 Sept 2018; Quarter 4 - 1 October - 31 December 2018; Quarter 1 - 1 January - 31 March 2019.

Longer term trends

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

The first quarter of 2019 has the highest overall injury rate of any quarter over the last three years (Figure 1). However, rates of catastrophic and major injuries are consistent with those in 2018, and the upward trend is predominantly due to an increase in minor I, minor II, and medium 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 following 18 months (2017 Q3 - 2018 Q4), and reached 13.8 per 1000 starts in this quarter. 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 following 18 months and reached 11.7 per 1000 starts in this quarter.

The first quarter of 2019 shows the same seasonal patterns of higher injury rates in the hotter months (quarters 1 and 4, Figure 1) as do 2017 and 2018. Seasonal patterns in injury rates continue to be investigated to ascertain what role heat and moisture content in race tracks may play.

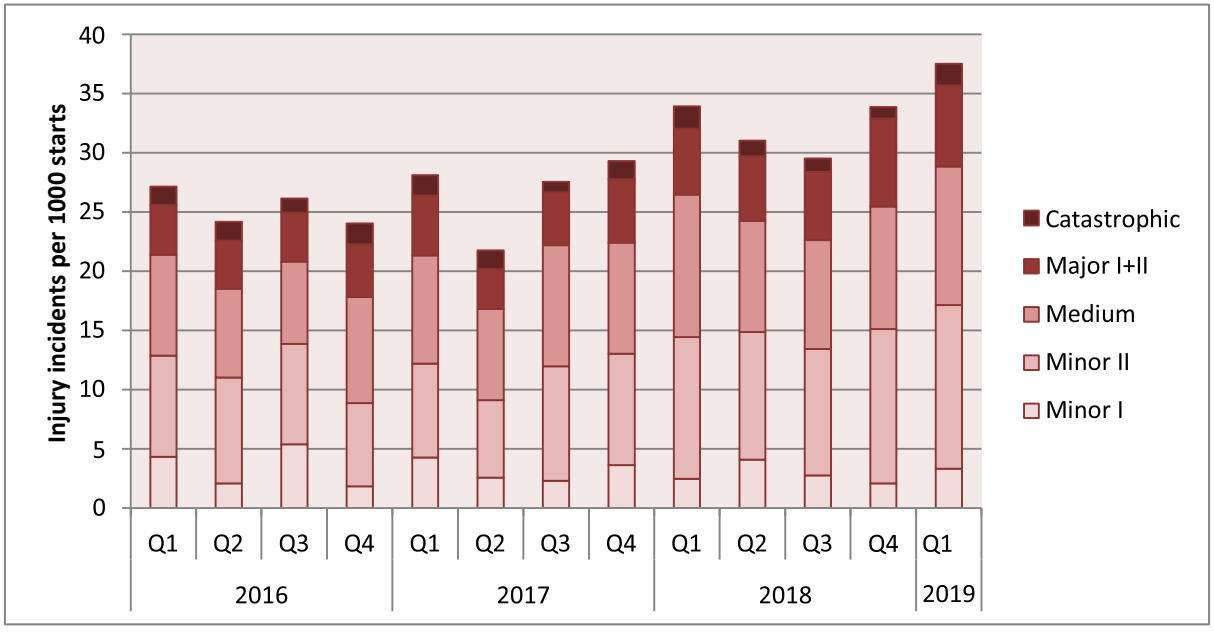

Figure 1: Injury trends by year quarters since 2016
*Data before Q3 2018 is from GRNSW reports available at http://www.grnsw.com.au/welfare/veterinary/injury-report

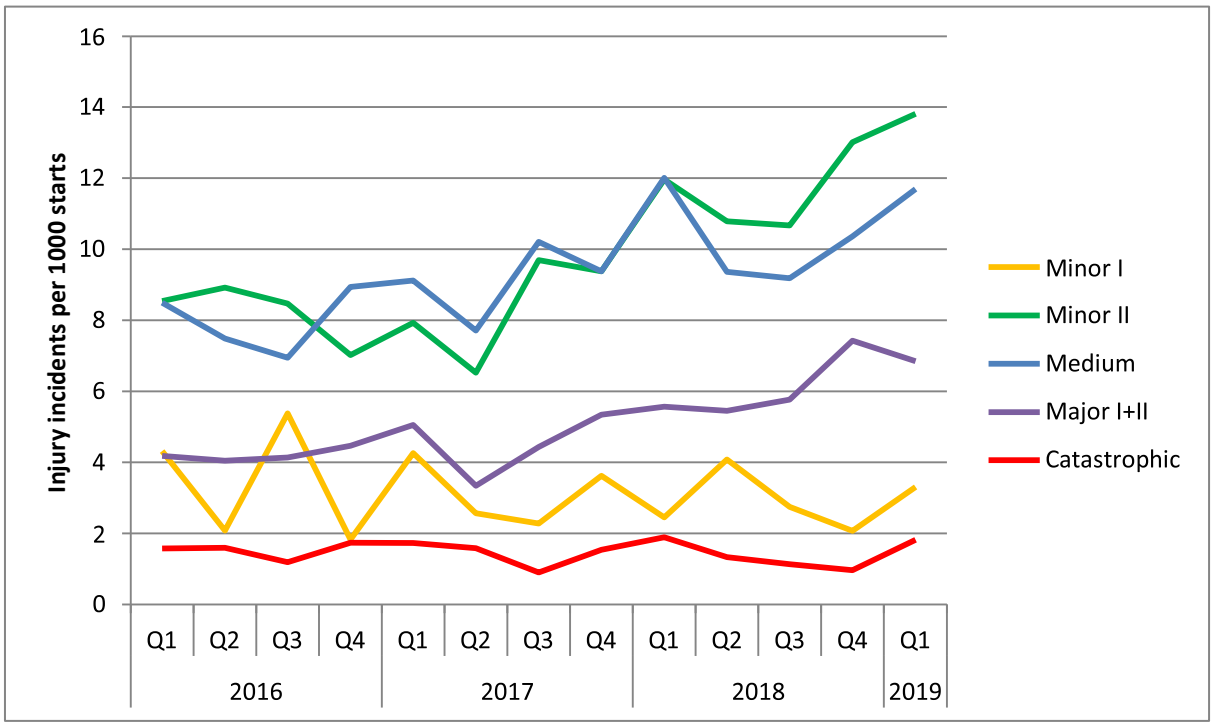

Figure 2: Trends in injury category by year quarters since 2016

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

Injuries by severity

The largest proportion of injuries in this quarter were minor I and II (45.7%), followed by medium (31.2%) and major I (14%). Likely recoverable injuries (minor I, minor II, medium, major I) made up 91% of all greyhound injuries during this quarter. Major II injuries were 4.3% of all injuries, and catastrophic injuries were 4.8% of all injuries reported. Injuries which required incapacitation of 21 days or less (minor I + minor II + medium) made up 77% of this quarter's injuries, similar to previous results (Table 4).

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 9.1% of all injuries in this quarter, compared to 5.9% in the third quarter and 9% in the fourth quarter of 2018.

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

	Calendar year			
	2016	**2017**	**2018**	**Q1 2019**
Minor I + II + medium injuries	77%	78%	77%	77%
Major I + II + catastrophic injuries	23%	22%	23%	23%

The higher proportion of major II and catastrophic injuries occurring during this period were reviewed by the Race Injury Review Panel as it began its work analysing contributing factors to major II and catastrophic race injuries in January 2019.

In the majority of cases (31%), the Panel concluded that greyhound factors such as the age, previous injury history and racing program of a greyhound may have contributed to the injury event in question; in 27% of cases, a racing incident contributed to a fall and resulted in the injury; and in 10% of cases, the track surface may have contributed to the injury in concert with other race and greyhound factors. The remaining injuries were as a result of miscellaneous events or misadventure, which are unpredictable.

The Panel continues to study all the contributing factors of major II and catastrophic injuries and, over time, the data collected will assist in informing prevention strategies and regulatory steps to minimise the incidence of racing injuries.

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 32 greyhound fatalities during this quarter, 30 were euthanased as a result of catastrophic injuries sustained during racing. There were two instances of sudden death occurring at a racecourse after the completion of a race, one resulting from collision with a post following a race fall; and one death after a race due to a ruptured internal artery, which was confirmed on necropsy. Twenty-five fatalities occurred at TAB tracks, and seven at non-TAB tracks.

The fatality rate for this quarter represents 1.8 per 1000 race starts, which is slightly lower than the previous first quarter of 2018 but higher than the subsequent quarters of 2018.

Twelve 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.

Two greyhounds were reported as having been euthanased as a result of injuries sustained during unofficial club trials. These were not included in the total of catastrophic injuries reported above.

Injuries by anatomical location

Consistent with the previous quarter, the majority of injuries (53%) were to the right hind and right forelegs (Figure 3).

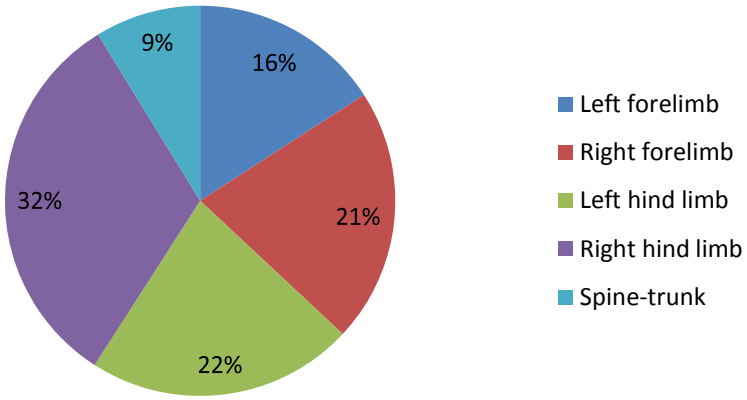

Figure 3: All injuries by anatomical location in quarter 1, 2019

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.

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:

- The Race Injury Review Panel meets 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 in order to inform its Track Safety and Design Study, which aims to improve understanding of the track-related aspects of racing injuries.