Effects of the number of starts on greyhound racing dynamics

Fatemeh Mahdavi 1, Hasti Hayati, 1, Paul J Kennedy, 2, David Eager 1

1 School of Mechanical and Mechatronic Engineering, University of Technology Sydney, NSW, Australia
2 School of Software, University of Technology Sydney, NSW, Australia
Email: sanaz.mahdavi@uts.edu.au

Summary
In order to reduce the congestion related injuries in greyhound racing, a study was designed to verify the effect of the number of starters on greyhound racing dynamics. The results showed that the injury rates of races with 6 is lower compared to 7 and 8 start races. With 6 greyhounds in a race where boxes 3 and 6 are empty, there were significantly less catastrophic and major injuries compared to races with 7 and 8 greyhounds.

Introduction
As with children falling in playgrounds, long bones fractures are common injuries in racing greyhounds caused usually by collisions or falls [1, 2]. The number of injuries occurred in first turn is largely due to the congestion and the acceleration phase [3]. The hypothesis is that reducing the congestion will result in a decrease of injury rate in greyhound racing.

The variable explored in this study is the number of greyhounds in a race. In Australia have 8 start races, whereas other greyhound racing jurisdictions such as England and Ireland have 6 start races as standard practice. A study has been designed to explore the effectiveness of this variable on the racing dynamic and resulting injury rates.

Methods
Over a two-year period, race data were recorded from 33 tracks in NSW, Australia. Even though the races are usually with eight greyhounds, there were races with fewer greyhounds due to one or more scratching. The comparison of injury rates showed a smaller number of injuries in the races with lower number of competing greyhounds.

A more controlled experiment was done in one track in NSW, Australia. The special starting box arrangement was proposed as having greyhounds positioned into all starting boxes except boxes 3 and 6. 6* marker is used for races with this arrangement. The injuries were recorded and compared with 7 and 8 greyhound races in the same track. The hypothesis was having more space between greyhounds at the start will help with the congestions, especially while negotiating their way around the first turn.

The injuries were categorised by the severity of injury. Table 1 shows the number resting days and typical injury by category.

Results and Discussion
The statistical analysis showed that there were significantly lower number of injuries in 6* start races compared to races 8 greyhounds. No injuries that lead to a greyhound death were recorded in the 6* start races. The results showed that 6* start races have statistically significant lower number Major and Catastrophic injuries compared to 7 and 8 races. As the number of races with 6*, 7 and 8 starts were not the same, Figure 1 shows the normalised number of injuries per 1000 starts.

![Figure 1: Comparison of normalised number of injuries](image)

With limitations and the presence of many other possible affecting factors, it is difficult to say with certainty that this will have a major impact on the injury rate. However, having more 6* starts races will provide more reliable data.

Conclusions
In conclusion, the preliminary experiment showed that having a reduced number of greyhounds per race can reduce the number and severity of injuries.

Acknowledgments
Thanks to Greyhound Racing NSW for funding this project and providing greyhound racing data.

References

Table 1: Categories of injuries.

<table>
<thead>
<tr>
<th>Incapacitation period</th>
<th>Minor-1</th>
<th>Minor-2</th>
<th>Medium</th>
<th>Major</th>
<th>Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 days</td>
<td>1-10 days</td>
<td>11-21 days</td>
<td>Greater than 21 days</td>
<td>Deceased or euthanized at track</td>
<td></td>
</tr>
<tr>
<td>Typical injury types</td>
<td>Grazes</td>
<td>Mild skin laceration</td>
<td>Joint/ligament sprain/skin laceration</td>
<td>Bone fracture</td>
<td>Severe skull or spinal trauma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complex/open/join fracture</td>
</tr>
</tbody>
</table>