



### Faculty Research Committee

#### Undergraduate Summer Research Internship Scheme 2019

**Project Title:** Injuries in non-horse-racing related activities: Is it time to focus on injury prevention outside of race-day?

**Principal Investigator:** Dr Siobhan O'Connor

**School/Research Centre:** School of Health and Human Performance

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#### **Brief description**

Dr O'Connor is an Assistant Professor in the School of Health and Human Performance and a member of the Sports Medicine Research Cluster. She is an injury surveillance researcher with a focus on developing research that leads to real-world impact in injury prevention. She has active national and international collaborations that will expose the intern to an injury prevention network not previously available to them. She has collaborated on research projects with national sporting bodies and international research partners from the USA, Australia, New Zealand and UK. She is establishing a research network with centres of excellence worldwide, awarded with funding by the IRC. She was awarded the 2017 Executive Endeavour Fellowship by the Australian Government to fund a 10-week research collaboration visit to ACRISP, one of only 11 centres worldwide selected in a medical research network by the International Olympic Committee.

She has published 25 articles in peer-reviewed journals, 7 under-review, 21 oral presentations and 11 poster presentations at national/international conferences in this field. She is currently supervising 5 PhD students, 1 MSc student and successfully supervised 3 MSc students to completion in DCU and AIT. As a PI, she has received over €170,000 of competitively acquired national/international funding.

She oversees the injury surveillance research in the Irish Horse-racing Regulatory Body (IRHB) Jockey Research Group, with recent outputs including two longitudinal injury surveillance projects in amateur and professional horse-racing and the first study to examine concussion history and reporting behaviours in horse-racing worldwide. She is leading an international collaborative project examining injury surveillance data collection methods in horse-racing to standardise injury surveillance methods for international horse-racing. The intern will link with the stakeholder (IHRB), and be awarded the opportunity to see the real-world impact of research by assisting the dissemination of findings to the IHRB and wider racing community.

#### **Job Descriptor**

The Sports Medicine Research Cluster at DCU seeks an Undergraduate Summer Intern to implement a large scale questionnaire examining non-race-day related injuries in professional and amateur jockeys. While the fall and injury incidence is well established in Ireland and worldwide, there is a lack of research examining injuries that are sustained outside of race-day. Therefore, this research project, in partnership with the Irish Horse-racing Regulatory Board Jockey Research Group, aims to identify whether injuries are common during non-racing related activities and examine the socioeconomic and healthcare burden of these injuries.

#### **Principal Duties and Responsibilities**

Under the supervision of the Principal Investigator, the Intern will:

- Engage in appropriate training as required
- Work as part of the DCU Sports Medicine Cluster and IHRB Jockey research team
- Develop online platforms to advertise the questionnaire
- Recruit jockeys complete the questionnaire
- Write a report on preliminary findings
- Develop an infographic to disseminate the key findings to jockeys and the wider horse-racing community
- Carry out administrative work associated with the project as necessary
- Assist in the development of summary findings and presentation thereof

### Further Project Description

Horse-racing is a hugely popular sport that is participated in worldwide. The horse-racing industry contributes 1.84 billion annually to the Irish economy and supports almost 29,000 Irish jobs.<sup>1</sup> The risk of fall and subsequent injury while riding a horse is high, due to the characteristic high speeds, riding over irregular terrain, and the unique human-animal interaction, whereby the rider is sitting precariously 3m above the ground on a horse.<sup>2-4</sup> The fall and injury incidence during professional and amateur horse-racing is well established in Ireland<sup>2,3</sup> and worldwide.<sup>5-7</sup> In Irish professional horse racing, 1 fall occurs in every 20 rides, with 20% resulting injury and 1 in 250 rides in flat racing result in a fall, but 35% of falls lead to an injury, and usually tend to be more serious than in jump racing.<sup>2</sup> During amateur horse racing, 1 fall occurs in every 7 rides and 6.7% of these result in an injury. Fracture and concussion incidences are also high, particularly in amateur jockeys.<sup>3</sup> Injury in jockeys are concerning as they may lead to time out of work which consequently results in increasing financial concern.

However, while a jockey may spend limited hours a week in a race, they spend a significantly greater time period daily in non-racing related activities.<sup>8</sup> Non-racing activities include exercise riding, riding work (simulated race-riding as part of working duties completed daily usually in the morning), schooling (practice races in preparation for racing) and yard-related activities. During riding work and schooling in particular, riders can reach speeds similar to race-day which may be in excess of 65 km/hr. However, unlike race-day, no ambulance follows these riders around on these occasions. Horse behaviour is also a key element to injury risk, both on race-day and during other non-riding activities such as horse handling, grooming, saddling, shoeing, loading/unloading and stable work.<sup>9,10</sup> Injuries can occur due to horses becoming frightened and bolting, bucking or rearing.<sup>4</sup>

Jockey injury incidence outside of race-day is largely unknown in both the Irish and international context. The demanding and challenging lifestyle of a jockey can lead to additional pressures that encourage jockeys to avoid reporting injury that occurs outside race-day. Jockeys are paid a fixed fee for every ride and a fixed percentage of any prize money achieved for winning the race or being placed. If a jockey is stood down from racing due to injury, they are not able to ride and so do not receive payment. In addition, further financial strain can be experienced due to the importance of each race to secure subsequent rides in the future. Previous retrospective research by the Irish Horse-racing Regulatory Board (IHRB) Research Group found that over a half of jockeys would not report a concussion if it occurred during riding work or schooling and 1 in 10 have previously ridden a race on the same day as sustaining a suspected concussion that day during riding out.<sup>11</sup> If this concussion occurred during a race, they would have required mandatory assessment by a physician and immediate stand-down from racing to undertake a return-to-riding concussion rehabilitation program.<sup>11</sup> Some reasons for not reporting the concussion included risk of losing a ride, needing the money and considering the race too important.<sup>11</sup> This highlights the serious detrimental impact injury during non-racing activities can have on jockeys' health, well-being and ability to perform.

To our knowledge, no research to date has examined injuries during non-race-day related activities in jockeys. This proposed project aims to:

1. Establish the prevalence of injuries during non-racing related activities
2. Identify the aetiology, nature, severity and location of injuries

3. Classify the socioeconomic burden (financial costs, time loss from racing/work) and healthcare burden (imaging requirements, primary care and/or private practice consultations, presentation to hospitals etc) due to injury occurring in non-racing related activities in Ireland.

*Hypothesis:*

1. Injuries during non-racing related activities will be relatively common.
2. Injuries will primarily be soft tissue in nature, occurring due to falls from the horse, particularly during schooling and riding work.
3. Injuries will lead to a substantial socioeconomic burden to the jockey, their family and the healthcare system.

This project will be a collaborative pilot project within the IHRB Jockey Research Group, which incorporates researchers from DCU, WIT and UL and clinicians/officials. This project can facilitate tangible change to jockey and stable-staff well-being as it will 1. identify whether a prospective research project is required to further examine the injury risk in non-racing related activities, 2. identify the socioeconomic and healthcare burden of non-racing related injuries, 3. allow the research group to prioritize non-racing related injury prevention strategies specific to this population, 4. facilitate practical recommendations to the IHRB on potential measures to improve safety in the Irish racing workplace.

*Research design:*

- Cross-sectional survey

*Methodology:*

An anonymous online and paper survey will be adapted from current research and validated by the IHRB Research Group. Ethical approval will also be gained by the IHRB Research Group through DCU Research Ethics Committee by April 2019. The intern will distribute it through the IHRB, word of mouth, social media and at race tracks. All professional and amateur jockeys with a current licence will be eligible. The questionnaire will comprise of three sections 1. demographic information 2. previous injury and non-racing related exposure 3. injury nature, severity, location and aetiology, and 4. financial costs experienced due to injury, time loss from work/racing and whether imaging, further consultations with healthcare professionals and/or presentation to hospital required.

*Data analysis:*

- Collected data will be analysed using general descriptive statistics on Microsoft Excel and then analysed using SPSS (inferential statistics). An alpha value <0.05 will indicate statistical significance.

*Key outputs:*

- A summary report of key findings to the IHRB, Injured Jockeys Association, Horse Racing Ireland as well as distributed to The Irish Field and Racing Post to reach the wider racing population.
- Create an infographic of key findings for dissemination to all stakeholders (jockeys, their families and IHRB), distributed through social media/websites.
- The research group with the intern's assistance will publish the findings in a high impact, peer-reviewed journal and at one high-profile national/international conference.

**Skills Gained by the Intern**

Dr O'Connor and the IHRB Jockey Research Group are currently completing longitudinal surveillance on race-day injuries in professional and amateur jockeys. They aim to expand their current data to incorporate non-racing related activities. This project will be a pilot-study to gather invaluable initial information on whether longer prospective research is required. The intern will engage in appropriate training as required and work as part of the Sports Medicine Research Cluster in DCU and as a wider member of the IHRB Jockey Research Group. The specific duties that the intern will have to perform when completing this study include:

### 1. Survey development

Familiarise themselves with the survey created and validated by the IRHB Jockey Research group and the online platform it will be distributed through. Pilot this survey with 10 jockeys.

### 2. Distributing the Survey

Distribute and advertise the survey to professional and amateur jockeys through the IHRB, word of mouth, social media and at race tracks. Engage with participants on any questions they may have related to the survey or study itself with support from the PI.

### 3. Analysis of Data

Analyse the data collected from the survey on Excel and transform this into relevant findings. Use Excel/SPSS to statistically analyse the data as appropriate.

### 4. Presentation of Findings

Write a report on the key findings and develop an infographic to disseminate these important findings to all stakeholders and the wider racing community. Carry out administrative work associated with the project as necessary and assist in the development of any papers or presentations required.

### Training and Skills:

- Collaboration skills

Participating in this pilot study will provide the intern with an invaluable experience in collaborating with both researchers (UL, WIT) and governing bodies (Irish Horse-racing Regulatory Body).

- Scientific Writing:

Develop scientific writing skills through the completion of the final report. This will greatly aid their future academic writing ability.

- Data collection skills

Gain data collection skills by recruiting jockeys to complete the survey and also how to adapt a survey based on a pilot.

- Communication Skills

Gain clear and effective communication skills during distribution of the survey and weekly meetings and interactions with the research teams and stakeholder representative.

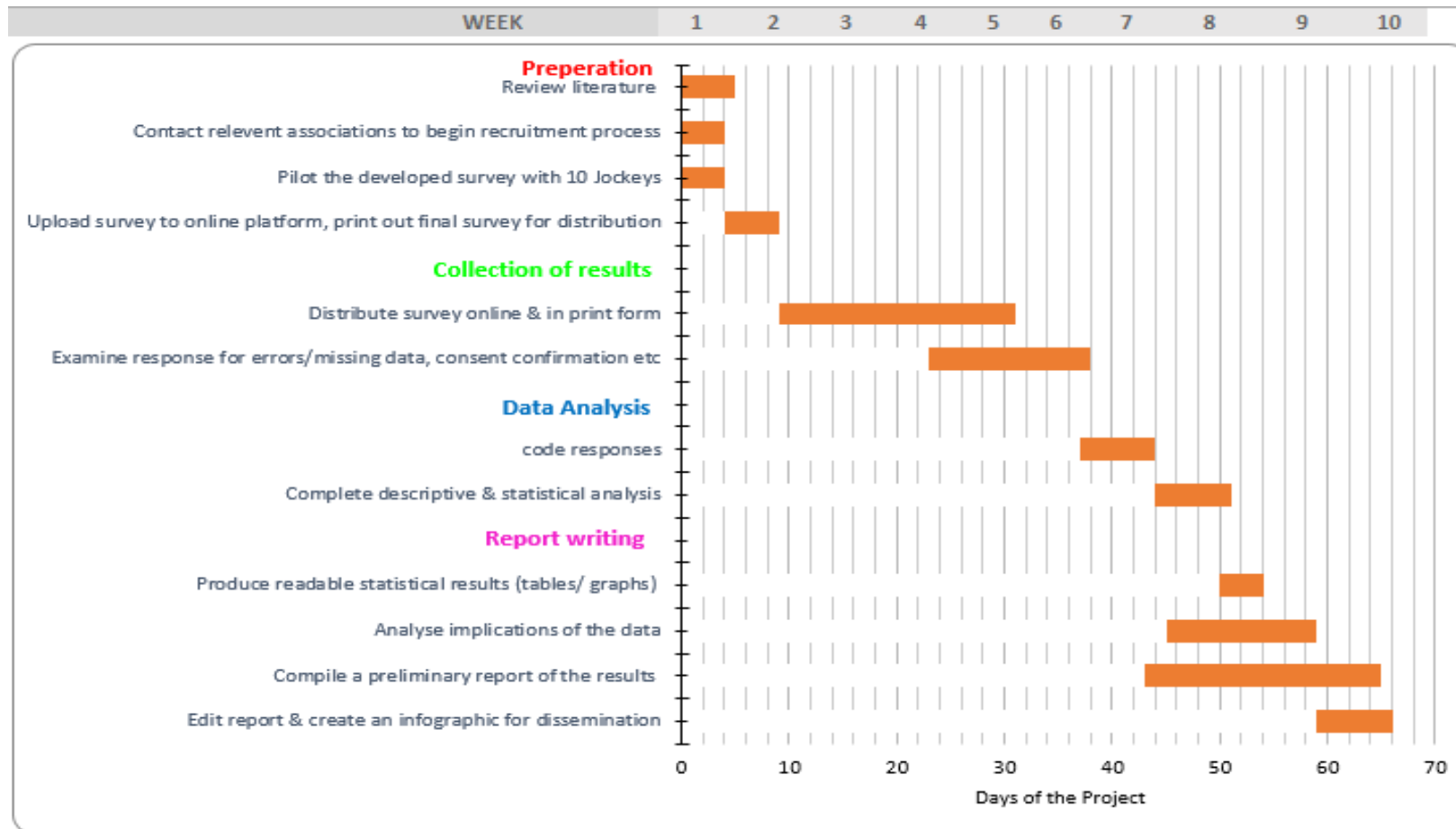
- Analytical skills, Critical Thinking & Graphic Analysis of Data

Use analytical skills to review the data and transfer the results into applicable, relevant summaries. Learn how to present the data graphically so readers can understand the findings in a clear manner.

- Creative Dissemination Skills

Develop an infographic for dissemination.

## Gantt Chart



| TASK NAME   | START DATE | END DATE | START ON DAY* | DURATION* (WORK DAYS) | PERCENT COMPLETE |
|---|------------|----------|---------------|-----------------------|------------------|
| <b>Preperation</b>  |            |          |               |                       |                  |
| Review literature   | 6/3        | 6/7      | 0             | 5                     | 0%               |
| Contact relevent associations to begin recruitment process                | 6/3        | 6/6      | 0             | 4                     | 0%               |
| Pilot the developed survey with 10 Jockeys                                | 6/3        | 6/6      | 0             | 4                     | 0%               |
| Upload survey to online platform, print out final survey for distribution | 6/7        | 6/11     | 4             | 5                     | 0%               |
| <b>Collection of results</b>  |            |          |               |                       |                  |
| Distribute survey online & in print form                                  | 6/12       | 7/3      | 9             | 22                    | 0%               |
| Examine response for errors/missing data, consent confirmation etc        | 6/26       | 7/10     | 23            | 15                    | 0%               |
| <b>Data Analysis</b>  |            |          |               |                       |                  |
| code responses  | 7/10       | 7/16     | 37            | 7                     | 0%               |
| Complete descriptive & statistical analysis                               | 7/17       | 7/23     | 44            | 7                     | 0%               |
| <b>Report writing</b>   |            |          |               |                       |                  |
| Produce readable statistical results (tables/ graphs)                     | 7/23       | 7/26     | 50            | 4                     | 0%               |
| Analyse implications of the data  | 7/18       | 7/31     | 45            | 14                    | 0%               |
| Compile a preliminary report of the results                               | 7/16       | 8/6      | 43            | 22                    | 0%               |
| Edit report & create an infographic for dissemination                     | 8/1        | 8/7      | 59            | 7                     | 0%               |
| Finalise Presentation of results & conclusions                            | 8/6        | 8/9      | 64            | 4                     | 0%               |

## References

1. Horse Racing Ireland. *Horse Racing Ireland Factbook*; 2017. [http://www.hri.ie/uploadedFiles/HRI-Corporate/HRI\\_Corporate/Press\\_Office/Components/factbook-2017.pdf](http://www.hri.ie/uploadedFiles/HRI-Corporate/HRI_Corporate/Press_Office/Components/factbook-2017.pdf).
2. O'Connor S, Warrington G, McGoldrick A, Cullen S. Epidemiology of Injury Due to Race-Day Jockey Falls in Professional Flat and Jump Horse Racing in Ireland, 2011–2015. *Journal of Athl Train*. 2017;52(12):1140-1146. doi:10.4085/1062-6050-52.12.17
3. O'Connor S, Warrington G, McGoldrick A, Cullen S. A nine-year epidemiological study (2007-2015) on race-day jockey fall and injury incidence in Irish amateur horse racing. *J Athl Train*. doi:https://doi.org/10.4085/1062-6050-339-17
4. O'Connor S, Hitchens PL, Fortington LV. Hospital-treated injuries from horse riding in Victoria, Australia: time to refocus on injury prevention? *BMJ Open Sport & Exercise Medicine*. 2018;4(1):e000321. doi:10.1136/bmjsem-2017-000321
5. Hitchens PL, Blizzard CL, Jones G, Day LM, Fell J. The incidence of race-day jockey falls in Australia, 2002-2006. *Medical Journal of Australia*. 2009;190(2):83-86.
6. Hitchens PL, Hill AE, Stover SM. Jockey Falls, Injuries, and Fatalities Associated With Thoroughbred and Quarter Horse Racing in California, 2007-2011. *Orthopaedic Journal of Sports Medicine*. 2013;1(1):2325967113492625. doi:10.1177/2325967113492625
7. Rueda MAF, Halley WL, Gilchrist MD. Fall and injury incidence rates of jockeys while racing in Ireland, France and Britain. *Injury*. 2010;41(5):533-539. doi:10.1016/j.injury.2009.05.009
8. Wilson G, Drust B, Morton JP, Close GL. Weight-Making Strategies in Professional Jockeys: Implications for Physical and Mental Health and Well-Being. *Sports Med*. 2014;44(6):785-796. doi:10.1007/s40279-014-0169-7
9. Watt GM, Finch CF. Preventing Equestrian Injuries. *Sports Med*. 1996;22(3):187-197. doi:10.2165/00007256-199622030-00005
10. Lang J, Sathivelu M, Tetsworth K, Pollard C, Harvey K, Bellamy N. The epidemiology of horse-related injuries for different horse exposures, activities, and age groups in Queensland, Australia. *Journal of Trauma and Acute Care Surgery*. 2014;76(1):205. doi:10.1097/TA.0b013e3182a9007e
11. O'Connor S, Warrington G, Whelan G, McGoldrick A, Cullen S. Concussion History, Reporting Behaviors, Attitudes, and Knowledge in Jockeys. *Clin J Sport Med*. 2018;00:1-7.