Professional Thoroughbred Jockey Injuries: Epidemiology, Causations, and Outcomes

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ABSTRACT
Professional Thoroughbred Jockeys continually risk injury to participate in a high-energy, fast paced sport; however, current knowledge pertaining to jockey injuries is lacking. Therefore the purposes of this literature review are to: 1) provide an overview of the status of welfare of Thoroughbred and Quarter Horse racing jockeys, 2) describe contributing factors to jockey injury, 3) summarize the limited data documenting jockey injuries, 4) provide recommendations for future research, and 5) overview a plan to increase acquisition of data relative to medical care and injuries to jockeys in the United States.

DISCUSSION
Horse racing in the United States is a high paced, high energy environment with attendance figures ranging from 1.7 million in 2010 at one track, to 3.5 million in the early 90’s at the same track.¹ However, the largest races such as: Kentucky Derby, Preakness Stakes, Belmont Stakes, and the Breeders’ Cup, are seeing increases in attendance and television ratings, with the Kentucky Derby having over 10 million households watching on their television during the 2010 race.¹ In a sport with attendance figures comparable to other professional sports,¹ the lack of scientific research about the health care and wellbeing of jockeys is troubling.

Professional Thoroughbred Jockeys on average weigh approximately 112-114 pounds and Quarter Horse jockeys weigh approximately 118 pounds stripped and have both been reported to be in better physical condition than professional football, baseball, basketball, and hockey players.² Jockeys ride an animal weighing between 1200-1700 pounds depending on the breed, running at speeds up to 45 mph.³ Injuries at these speeds can have catastrophic consequences; however epidemiology data on injuries in racing favors the horse rather than the jockey.⁴ There is a scarcity of information about the type, nature, frequency, and outcomes of jockey injuries. Additionally,
information about the equipment used by the jockeys and the conditions of the track is absent in the literature.

Many countries where thoroughbred racing is popular have conducted research about professional jockeys. A study conducted by Kinnect (2012) found that jockeys (4 females, 10 males) averaged; age 37.2 years, height 161.9cm, weight 55.4kg, BMI 21.2, resting heart rate 65bpm, resting blood pressure 118/69mmHg and had a body fat percentage 7.95%(males) and 14% (females). Different countries (e.g. Australia, Europe) have different minimum weight requirements for professional jockeys and it was not uncommon in the past for jockeys in the United States to weigh less than 120 lbs., with many jockeys weighing in at 109lbs. However, it should be noted that the minimum scale of weights for jockeys has increased in most jurisdictions, either by implementation of regulation or practice of the racing secretaries. The Association of Racing Commissioners International (ARCI) has adopted a model rule that stated: “With the exception of apprentice allowances, handicap races, three (3) year old horses entered to run in races against horses four (4) years old and upwards, and the allowance provided in subsection (2) of this section, no jockey shall be assigned a weight of less than 118 pounds. For three (3) year old horses entered to run in races against horses four (4) years old and upwards from January 1 through August 31, no jockey shall be assigned a weight of less than 116 pounds. Quarter Horses, Appaloosas and Paints minimum scale weights shall be 120 pounds for two-year-olds, 122 pounds for three-year-olds, and 124 pounds for four-year-olds and older.” (p.19)

Considering the strength, flexibility, endurance, balance, power, and reaction time required to control an animal as large as a race horse and the small stature of a jockey, it is easy to understand why jockeys suffer multiple injuries throughout the season. Adding to the injury rate of the professional jockey is the transient nature of the profession and the sheer number of races a typical jockey rides. In Australia, it is not uncommon for a jockey to ride in as many as 1000 races per year and ride in races ranging from 800m to 3600m, while in the United States jockeys started on average in 888 races throughout the 2012 racing season.

Additional contributing factors for jockey injuries may be associated with features of the tracks themselves, such as: starting gates, weather, conditions of the track, track surface, and safety rails. For example, Waller (2000) identified 16% of injuries have been noted to occur during the home stretch or finish and 14% occur during the turns. Additionally, 35% of all jockey injuries occur while entering, within, or leaving the starting gate. With a large number of injuries occurring before the race even begins, many racing authorities have suggested minimum requirements for padding in the starting gates. However, there is no published data on the effect of increased padding and the role it could provide in injury prevention. The condition of the track has been investigated as a risk factor for the integrity of the horse, although no information is currently available on track composition and its role in injuries sustained by jockeys. Additionally, there is no data currently available on synthetic surfaces. This is of particular interest because many tracks in the United States have instituted synthetic material, which typically include polypropylene, rubber, and silica sand. In addition, the effect of weather has not been systematically studied. In Europe it has been reported that weather (bright-sunshine/rain) was identified as having an impact on the injury risk for the horse. The studies also identified an increased number of injuries associated with rain, as the footing for the horses is altered when the track surface temperature rises or gets wet.

Synthetic tracks were introduced to improve consistency and safety. However, no data exists evaluating if track material influences injury patterns in jockeys. The current literature related to track material has evaluated injury patterns relative to the welfare of the horse, not the
jockey. Synthetic tracks are typically made up of polypropylene and other mixed fibers, rubber, and silica sand which are covered in a wax coating. Wax makes the track material resist water and also helps to make particles stick together. However, as the temperature of the track surface increases, the properties of the wax changes and as a result changes the dynamics of the race. Synthetic tracks have been reported to influence race speed which may be influenced by temperature. Specifically, as temperatures increase above 43°C speed has reported to decrease as the wax reaches its melting point. What is not known is the influence synthetic tracks have on injuries to horse and rider. Dirt tracks have been reported to breakdown more than synthetic tracks leaving both the jockey and the horse at a greater risk for injury whereas synthetic tracks tend to hold their composition better throughout the race day. Regardless of track surface, jockeys ride animals approximately 12 to 15 times greater than themselves; therefore consequences that put the animal at risk also put the jockey at a higher risk of injury.

A number of studies have established factors that may lead to breakdown in horses. These factors include: the track itself as some tracks show a lower frequency of horse breakdown than others; the track condition, sloppy track conditions lead to an increase risk of breakdown; and the track composition, turf tracks had a lower risk compared to dirt surfaces. Additionally, the number of races in the season, the time of the race, number of starts in the season, the age of the horse, and the season in which the race was occurring were all correlated with an increased number of breakdowns in thoroughbred horses.

Previous injury studies performed on professional jockeys in the United States have revealed that the most common injuries that occur to jockeys include; fractures, dislocations, concussions, and soft tissue injuries. Of the injuries occurring to jockeys, the most common body part injured is the leg followed by shoulder. Other body segments having a high rate of injury rate include arm, chest/rib, and spine/back. A study by Waller (2000) identified an injury rates during actual races of 600 per 1000 jockeys per year. Additionally, it was identified that 30% of all injuries occurred before or after the race and that 44% of injuries occurring during a race were a result of falling from the horse.

Many European countries compete in horse racing similar to that being held in the United States and injury reports from those countries show similar findings to that of the United States studies. McCrory (2006) comparing injury rates for flat and jump type races in France and Great Britain, it was found that injury rates were significantly different between countries. Due to the different incidences of injury between counties, determining the injury rate in the United States on many tracks, track surfaces, and track conditions will lead to a better understanding of how and why jockeys sustain injuries while performing their profession. This information is important if interventions or changes are to occur to reduce injuries. European countries have a greater assortment of jump races. Jump racing is a very popular sport throughout Europe and as a result, injury reports have been conducted on those jockeys. Types of jump racing include: hurdle (solid fence), hurdle (brush fence), steeplechase/point-to-point, flat, and cross country. Injury reports conducted on jump racing have found similar findings to those of standard flat racing in that the majority of injuries occur to the extremities, consist of mainly fractures, dislocations, and concussions, and occur primarily from falling from the horse (which seems to occur more frequently in jump racing compared to flat racing). While Europe has studied injury patterns for jockeys better than the United States it is hard to draw comparisons between the two because a greater number of events involve jumping than in the United States.
CONCLUSION
With the popularity of American thoroughbred racing, the lack of scientific research on the jockeys is astonishing. Attendance figures and earnings for the sports are similar to that of other professional sports,¹ however, there is a lack of published data on the severity, type, and location of injuries that jockeys sustain. Furthermore, it is currently not understood how the injury rates differ between tracks and what impact safety equipment has on diminishing those risks. Future research needs to focus on how and when jockeys are getting injured as well as what conditions may be leading to those injuries. Consistent documentation and analysis of injury patterns will provide the baseline data to manage and effectively create injury prevention programs for equine racing. Additionally, identifying trends in the data may allow the governing bodies of professional jockeys to introduce new accreditation standards for the sport ultimately making the sport safer for the athletes that participate.

With the assistance of the Jockey Guild, Inc., the organization representing the vast majority of American Thoroughbred and Quarter Horse jockeys, a nationwide database has been established to track some of the contributing factors to jockey injuries, including: track surface, surface conditions, on-site medical staff, location incident occurred, types of equipment (helmet, body protection) used at the time of injury, and the nature and extent of the injury. Many tracks across the United States have been tasked with reporting any injury sustained by a jockey. The data will be examined to identify any trends in jockey injuries. These trends can then be used to implement stricter guidelines for safety of the jockeys based upon the characteristics that might contribute to an increase in the number and/or severity of injuries including the availability medical personnel, safety procedures, and facilities.

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