NIOSH researchers conducted a thorough medical and scientific literature review of existing research regarding safety and health issues for jockeys. Following is a brief bulleted summary of the findings:

Safety

- Though deaths have been reported, rates of fatal injury have not, precluding the assessment of levels of risk.
    - The Jockeys' Guild of America reported that over 100 jockeys have been killed since 1950.[1] Nine were killed in Great Britain between 1975 and 2000.[2]
    - Rates of injury death have not been reported, nor can they be calculated from previous studies. NIOSH researchers explored the possibility of calculating a rate using the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI). CFOI includes data, collected since 1992, on more than 5,000 occupational injury deaths each year in the U.S.[3] NIOSH researchers were unable to identify the number of jockey deaths in CFOI because coding does not support the specific identification of jockeys and narrative word searches were not productive.
- Jockeys appear to have high rates of nonfatal injury.
    - A study of injuries among U.S. licensed jockeys reported 600 injuries per 1,000 jockey years.[4] This rate was limited to injuries incurred during a race, and did not encompass injuries that may have occurred during horse handling and training.
- Common jockey injuries are fractures, dislocations, concussions, and soft tissue injuries[5,6,7]

    - A survey of 1,100 active U.S. jockeys reported that fractures were the most common injury resulting in lost time injuries, accounting for 64% of career injuries among this population. Legs, shoulders and arms were the most common fracture sites.[7]
    - Serious head and spinal cord injuries occur among jockeys.
- Jockeys and other handlers become at risk of injury as soon as they are proximate to the horse.
    - A study of injuries in professional horse racing in Great Britain found that 30% of injuries occurred before or after the race. [3]
    - A recent death in New York involved a track assistant starter who died after being kicked in the chest by a horse he was loading into the starting gate.[8] Although jockeys are generally required to wear helmets, gate crew members are not.
- Jockey injuries occur throughout a race, though injuries at the starting gate appear to be most common.[6]
    - A study of licensed jockeys in the U.S. found that 35% of injuries occurred while entering, within, or leaving the starting gate. Sixteen percent of injuries occurred during the home stretch or finish, and 14% of injuries occurred in the turns.
- Becoming unseated from a horse appears to be a common cause of jockey injury.[7]
    - A survey of 1,100 active jockeys in the U.S. found that 69% of lost-time injuries occurring over their career resulted from becoming unseated from a

horse. Injuries also resulted from hitting the starting gate, hitting a rail, and poor track conditions.

- The position in which a jockey rides may also contribute to injury. Jockeys do not sit directly on the horse, but rather use their legs for gripping, stability, and balance. This forces them into a forward lean, creating a forced static posture over the horse. Jockeys are subject to dynamic and static joint loading, impact loading, and injuries associated with acceleration and deceleration from racing.
    - The combination of the applied forces, static postures, repetitiveness, and trauma from joint loading may lead to musculoskeletal injury of the lower extremities and spine.[9,10]
    - Continual acceleration and deceleration from racing, while forced to maintain forward leaning postures, can propel a jockey over the head of the horse in the event of sudden stop or stumble by the horse, or result in contact with the horse's head.
    - A study of U.S. licensed jockeys found that 44% of injuries during official races resulted from being thrown from the horse. Five percent of the injuries in this study resulted from striking or being struck by the horse's head.[4]

Health

- Pressures of competition, added to existing requirements of very low body weights, increases the risk for jockeys to acquire disordered eating habits and to adopt other unhealthy behaviors in order to make weight.[11,12,13,14,15] Examples include:
    - Vomiting

    - Abuse of laxatives and diuretics
    - Saunas and hot baths to lose water weight
    - Excessive exercise
    - Smoking to curb appetite
    - Food restriction and avoidance
    - Diet pills
    - Fluid restriction
- These disordered eating habits and other weight loss behaviors can result in short and long term health effects such as:
    - Dental erosion
    - Nutritional deficiencies
    - Menstrual irregularity
    - Low bone density
    - Dehydration
    - Heat stress

Interventions

Several interventions that have been undertaken to address risks for injury and disordered eating:

- California has passed legislation to improve the health and welfare of jockeys in that state, including mandating a minimum weight of 118 pounds, which is six to eight pounds higher than the current minimum.

- The Del Mar Racetrack in California has installed a Fontana safety rail on its dirt track. This safety rail contains a thermoplastic elastomer cover instead of metal posts, preventing serious injuries to jockeys when they strike against or fall into these rails.
- Keeneland Racetrack in Kentucky is using a new type of track called "Polytrack", which is a combination of polypropylene fibers, recycled rubber and silica sand covered in a wax coating.[16] In addition to providing a uniform surface in all weather conditions, the synthetic surface offers a cushioning effect that may reduce the severity of fall injuries.

An evaluation of these and other interventions could determine their effectiveness in improving jockey health and safety, and demonstrate the potential value of widespread adoption. A proposal by researchers at Georgia State University to conduct a nationwide nutritional and health assessment of jockeys to provide a basis for policy decisions regarding jockey weights is currently being considered by the Del Mar Thoroughbred Club. The cooperation and active participation of the horse racing industry and jockey groups would be essential to ensure the relevance and implementation of proven interventions.

Potentially useful areas for further investigation are:

- Improvements in personal protective equipment for jockeys and others who work in close proximity to horses to reduce the incidence and severity of injuries from contact with horses and striking against racetrack structures and surfaces.

- Engineering controls for starting gates where a high proportion of jockey injuries occur. For example, an engineering analysis could be carried-out on materials that could be used inside the starting gate, that might prevent or reduce injury severity when jockeys strike the interior walls of the stalls.

Next Steps:

Further investigation would require the active participation and involvement of the horse racing industry and jockey groups to:

-identify interventions and data sources,

-ensure employer and jockey participation in the evaluation,

-ensure that potential new interventions are feasible and acceptable,

-encourage and ensure widespread adoption of proven protective technologies.

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[1] Chris McCarron, former member of Board of Directors, Jockeys' Guild of America, in testimony to the Committee on House Energy and Commerce Subcommittee on Oversight and Investigation, October 18, 2005.
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[16] http://www.polytrack.com/general.html