Real-time risk prediction for Thoroughbred racing at The Hong Kong Jockey Club

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(Major Research Grant: GBP 39,211)

Horse racing is popular all over the world. Good examples of horse racing governance involve careful management of racehorses to make sure their welfare needs are met, that they stay in good condition and are fit to race to the best of their ability. Even with the best management, racing still carries some risks to horses' (and jockeys') health. But everyone involved in racing should be aiming to minimise those risks.

The Hong Kong Jockey Club (HKJC) has one of, if not the most comprehensive system in the world for caring for racehorses and monitoring their well-being. Scientific studies in the rest of the world (and in Hong Kong) have been able to identify factors that increase the risk of deleterious outcomes for racehorses. Often, previous studies have been successful in finding factors in horses' racing histories that affected their level of risk. These studies commonly concluded that they were limited in their ability to accurately predict which horses were at greatest risk by a lack of information on training or veterinary treatments that horses have received. At the HKJC, all of this information is routinely recorded along with race records. This provides the opportunity to develop the most detailed risk profiles for racehorses at the time of entry into each race that are very likely to be significantly more predictive than anything that has been produced from previous work.

We believe that the data set collected by the HKJC could lead to the most powerful scientific study ever conducted relating to welfare risks in racehorses. Not only that, we believe that we can use the data set to create predictive models – that is, we will be able to state which horses are at the highest risk of a negative outcome, before they race. In the case of the HKJC, we will initially focus on the negative outcomes "post-race lameness" and "unacceptable performance". This study will demonstrate the true value and potential welfare impact of deep analyses of data that is routinely recorded by a racing jurisdiction. That impact is possible because of the level of detail in the data collected by the HKJC, so our further aim for this study is to demonstrate the equine welfare benefit of this investment in data collection to other racing jurisdictions, encouraging them to make greater efforts to routinely collect similar levels of data. The ultimate success of this work will be measured by a reduction in the frequency of post-race lameness and unacceptable performance in races at the HKJC, which will in turn likely reduce the frequency of more serious outcomes such as (fatal) musculoskeletal injury.