The stability of the rider's lower leg; a comparison of the first and last fence of a show jumping course.

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Introduction

There has been very little research into the riders jumping position in a competitive environment compared to other competitive sports. However it has been shown that equestrianism is more popular than sports such as rugby or cricket (BHIC, 2009). With so much research being focussed on the equine in order to achieve maximum results in competition, the lack of research on the rider's stability and effect on the horse's performance is disproportional.

This study aimed to investigate the stability of the rider's lower leg though out the three phases of a jump; take-off, flight and landing, comparing the first fence to the last fence in a course.

Materials and Methods

36 riders were filmed during the Hartpury Spectacular 2012 from the Cushion Bed Amateur 'A' tour 1st leg. The height of the course was 1.10/1.15m. The first and last fences were filmed at a perpendicular angle in order to record all three phases of the jump accurately. The lower leg angle was achieved by placing a horizontal line through the knee of the rider and angle was placed from the horizontal line to the back of the calf using the motion analysis system, Dartfish 6.0.

Statistics Package for Social Science (SPSS) version 21 was used in order to do the Kolmogorov- Smirnov normality test in order to find out whether the data collected was parametric or non-parametric. Due to the data being parametric the Paired T test was then used in order to compare the means of the lower leg angles over the first and last fence. The phases were analysed separately.

Results

There were no significant differences for take- off or landing for the lower leg angles over the first and last fence ($P > 0.05$) however there was a significant difference during the flight phase ($P < 0.05$). However when the means are represented on a bar graphs, there was consistently a larger angle over the last compared to the first showing the leg was in a further forward position over the last fence (Figure 1).

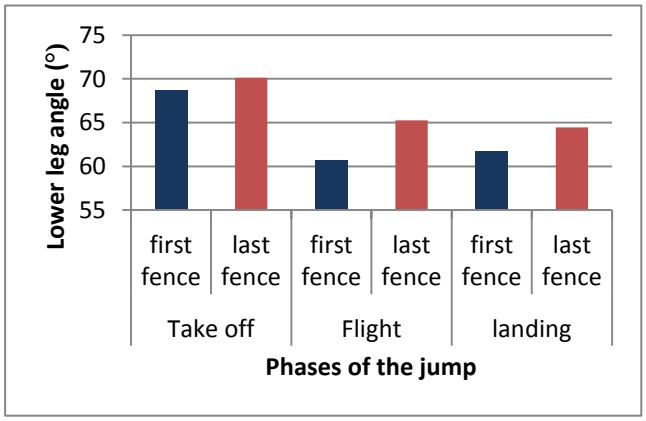

Figure 1. The comparative means of the lower leg angles during the phases of jump.

Discussion and Conclusions

The findings of this investigation showed that take-off and landing were not significant however flight was significant. There was however, a trend that the lower leg is in a more forward position over the last fence compared to the first fence. This could potentially be due to fatigue of the rider or the psychology mind-set of the rider during the course. This research although not completely significant does show an importance for coaching riders on their position and fitness in order to stay stable and consistent throughout competition. It could lead onto further research on the rider's effect on the horse's performance.