



## **Longitudinal field study reveals routine blood biochemical markers inadequate to indicate musculoskeletal injury risk in jump racing Thoroughbreds**

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**Background and Objectives:** Musculoskeletal injuries (MSIs) are a major welfare concern in the horseracing industry. This longitudinal study examines routine blood biochemical markers in jump racing Thoroughbreds to determine whether changes occur in subclinical horses that will experience MSIs.

**Materials and Methods:** Morning blood samples were collected bimensually from racehorses, at rest, pre-feeding, in three French training stables over 18 months. The case group (n = 13, including 7 bone fractures and 6 tendonitis) and matched controls (n = 10, matched for stable, sampling day, training regimen, age, sex, etc.) were sampled 4±2 times (mean±SD) consecutively. Injuries to affected horses manifested within two months post-final sampling. Analysed biochemical parameters included GGT, SDH, GLDH, AST, ALP, albumin, CK, cholesterol, SAA, bilirubin and bile acids. Statistical analyses involved the Wilcoxon test, chi-squared tests, and two-way ANOVA-type nonparametric analysis for longitudinal data.

**Results:** No statistically significant differences were found between cases and controls across measured parameters. However, temporal fluctuations were observed in several blood markers. Notably, there was a significant decrease over time in ALP levels across all groups. Additionally, the patterns of changes in total and indirect bilirubin, as well as cholesterol levels, were significantly different, with an increase observed in tendonitis cases *versus* a decrease in fracture cases, all within normal ranges.

**Discussion and Conclusions:** Although variations have been observed over time for certain parameters, they may reflect individual physiological changes rather than announcing upcoming injury. In conclusion, advanced technologies, such as "omics", need to be implemented to find relevant biomarkers.

**Conflict of interest:** The authors declare no conflict of interest.

**Ethical committee:** The study was approved by the Ethics Committee of the University of Liège (n°22-2480, 11/07/2022).

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