

Title: DETERMINATION OF CARDIOVASCULAR VARIABLES ASSOCIATED WITH ATHLETIC FUNCTION IN DRAFT PULLING HORSES

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Background: Cardiovascular changes have been documented in equine athletes during competition. Identifying cardiovascular variables associated with draft-horse performance could reveal risk factors, including cardiac arrhythmias or biochemical imbalances, that predispose this understudied population to cardiac injury.

Hypothesis: We hypothesize that draft pulling horses in competition experience similar changes in cardiovascular variables to those of equine athletes in other disciplines, and that abnormal cardiovascular variables identified during exercise may affect their health and/or performance outcomes.

Objectives: **1)** Evaluate cardiovascular status before and after competition using diagnostic tests proven to detect signs of cardiac injury or stress. **2)** Identify risk factors that predispose cardiac injury or stress during training or competition. **3)** Explore potential associations between cardiovascular risk factors and performance outcomes.

Methods: Twelve draft horses were evaluated at a pulling competition. Each horse had cardiac auscultation, a biochemical panel, cardiac troponin analysis, and a standing ECG performed prior to the start and immediately after completion of the competition.

Results: Cardiac arrhythmias were detected in two horses before competition; however, no arrhythmias were detected once the competition was complete. In all post-pull measurements, heart rates and serum potassium levels were significantly higher. Aspartate aminotransferase (AST) and creatine kinase (CK) were significantly lower in 92% of horses after competition. No significant difference in cardiac troponin-R was found before and after competition.

Conclusion: The draft-pulling competition elicited expected cardiovascular responses without evidence of acute myocardial injury. However, further investigation is crucial to understanding the biochemical changes in the cardiovascular system during exercise.

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