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CORRESPONDING AUTHOR

Luca Stucchi
luca.stucchi@unimi.it

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Performance profiling of Standardbred racehorses by means of Treadmill Exercise Testing.

Luca Stucchi[1*], Miranda Dosi[1], Francesco Ferrucci[1]

[1]*University of Milan, Department of Health, Animal Science and Food Safety, Italy*

Abstract

Treadmill exercise testing can be performed on a horse to evaluate the level of fitness with the aim of predicting performance (Franklin and Allen, 2014). The speed at 2 mmol/L of blood lactate (VLA2), the speed at 4 mmol/L (VLA4) and the speed at 200 bpm of heart rate (V200) are indices that have been related to performance (Coroucé *et al*., 2002). Aim of the present work is to analyze these parameters in a population of high performance Standarbred racehorses.

Six healthy and at the same level of training Standardbred racehorses (average age 3,3±2,0 y.o.) underwent an incremental exercise test (Zucca *et al*., 2003) on a high speed treadmill (Säto I, SATO, Sweden). During the test heart rate (HR) was monitored with a heart rate meter (Polar horsetrainer, Polar, Finland). Venous blood was collected with the aid of a 14G teflon venous catheter placed in the jugular vein. Plasma lactate was measured with enzymatic colorimetric method lactate dry-fast kit for automatic system (Cobas Mira Classic, Roche, Switzerland). Data were analyzed with a dedicated software (Lactate Express, Mesics, Germany) and VLA2, VLA4 and V200 were calculated and statistically compared by T-student test for paired sample (Prism, GraphPad, USA). Statistical significance was set at $p<0,05$.

Average VLA2 was 8.3±0.5 m/s, average VLA4 was 9.2±0.4 m/s, average V200 was 8.1±0.9. There was a significant difference between VLA4 and V200 (Fig. 1). No difference was observed between VLA2 and V200

V200 is often reported to be close to VLA4, and considered as correspondent to the onset of blood lactate accumulation (Coroucé *et al*., 2002). According to our results, it may be argued that V200 is a measure that does not fit with the lactate threshold.

These data could be used as control for further studies on racehorses with poor performance syndrome.

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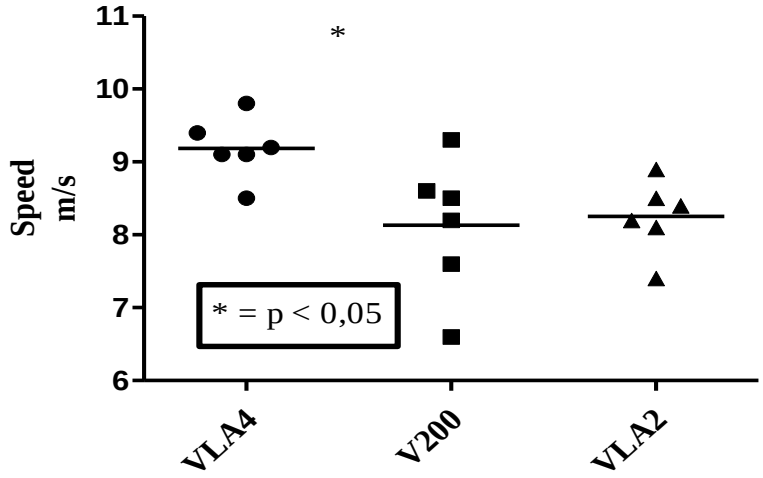

Fig.1: Difference between average VLA2, VLA4 and V200

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