

The Influence of Acute Treadmill Exercise on Semen Quality and Freezability in the Stallion

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The objective of this study was to investigate changes of quality and freezability of stallion semen in response to an acute standardized treadmill exercise. Ejaculates from 11 stallions were collected, evaluated and cryopreserved weekly during 4 periods of 4 weeks each defined as before (period 1), during (period 2), and after exercise (periods 3 and 4). In fresh semen the gel-free volume, sperm concentration, motility and morphology (normal sperm, major defects) were evaluated. In frozen-thawed semen motility as well as viability (SYBR-14/PI) were examined. During period 2 each stallion was worked twice a week on a treadmill using an interval training test of 3 minutes trotting (speed 3.5 m/sec) followed by one minute walking at increasing inclination (0°-9°). At 9° the speed was increased to 4 and 4.5 m/sec resulting in blood lactate concentrations > 4 mmol/l. Results of our investigation show that significantly ($P < 0.05$) more major defects were present in both periods after ($69.5 \pm 2.1\%$, $66.8 \pm 2.1\%$) than during ($62.5 \pm 2.2\%$) or before ($62.2 \pm 2.4\%$) exercise. In frozen-thawed semen motility decreased during working and significantly ($P < 0.05$) lower values (45.4 ± 2.3) were measured compared to period 4 (51.6 ± 1.7). Viability in frozen-thawed semen was significantly ($P < 0.05$) lower in semen frozen during ($49.2 \pm 2.0\%$) than before ($53.8 \pm 2.1\%$) or after ($53.7 \pm 1.6\%$) exercise. Our results clearly demonstrate that freezability was negatively influenced by acute exercise. An increase in major defects was observed in the period after work.