



International Equine Science Meeting 2008
University of Regensburg
Germany
October 3rd-5th 2008



Changes in heart rate and cortisol release during initial training of three-year-old warmblood sport horse stallions

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The first weeks of training in young sport horses have been suggested to represent a stressful period and training practises for horses have been questioned recently. So far, only limited data on the stress response of young horses to the initial training are available. Heart rate (HR) provides information on fitness of the horse but is also an indicator of stress or pain. Determination of cortisol metabolites in faeces is a non-invasive technique to determine a prolonged stress response. In our study, three-year-old warmblood sport horse stallions (n=8) were followed through a standardised 10-week classical training programme from lunging to first mounting of a rider and progressing to moderate work. Feed, housing and management were similar for all horses. HR was recorded with a mobile recording System (f810i, Polar, Kempele, Finland) fixed to a girth around the thorax of the horse and was monitored twice weekly from 30 min before to 30 min after training, i.e. including the training period. In addition, cortisol concentrations were determined in faecal samples collected three times daily. Overall basal HR before daily training was 39 ± 2 (SEM) beats/min and mean values did not change significantly over the 10-week study period. Average HR during initial lunging (week 1) was 119 ± 14 beats/min and decreased to 95 ± 5 beats/min in week 2. Due to individual variations this decrease did not reach statistical significance. Neither first mounting of a rider (89 ± 10 beats/min) nor an increasing workload (e.g. week 8: 111 ± 4 beats/min) were associated with prolonged increases in mean HR, but transient increases were recorded and the response to mounting of the rider differed markedly between stallions. After daily training, HR decreased rapidly but was slightly, although significantly ($p < 0.05$, Friedman-test) higher than pre-work values (46 ± 2 beats/min). Cortisol metabolite concentrations in faeces tended to decrease during the period of lunging, were not increased when the horses were first mounted by a rider but rose slightly with an increasing work load during the last 4 weeks of the 10-week training period. In conclusion, based on HR and faecal cortisol metabolite concentrations, the initial training of sport horse stallions in the classical German training system is not associated with major stress for the horse. The increase in HR during training is due to physical exercise itself and not associated with specific situations of the training programme.

Supported by a fellowship from *Stiftung Forschung für das Pferd* to AS