**Group accommodation increases stress parameters but does not impair development of two-year old Sport Horse stallions during 12 weeks of pre-training**

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**Application**: This study does not suggest an advantage of group housing of two-year-old stallions in a 12-week pre-training programme where they were regularly exercised and had daily access to outdoor paddocks.

**Introduction**: Sport Horse stallions preselected for breeding are often prepared for stallion licensing assessment before they are 30 months old. Although this preparation should be classified as pre-training, the initial training of young horses is a stress challenge (Schmidt et al., 2010; Kaps et al., 2022). This emphasizes the importance of a careful approach during pre-training and training of young horses. Horses are usually raised in groups but stabled individually before training. Although individual stabling allows visual and olfactory contact between animals in adjacent boxes, separation of horses previously kept in groups induced a transient stress response in some (Alexander and Irvine, 1998; Erber et al., 2013) but not all studies (Harewood and McGowan, 2005). Furthermore, horses kept in social groups were easier to handle than horses housed alone (Christensen et al., 2002). Therefore, we investigated cortisol profiles, HR, body development, presence of injuries as well as trainer scores in young stallions housed either in a group stable or in individual boxes during pretraining. We hypothesized that group housing improves physical fitness and reduces the potential stress compared to accommodation in individual boxes.

**Materials and Methods:** The study included 24 months-old Sport Horse stallions. They were kept as one group on pasture before they were transferred to housing in one group stable (GROUP, n = 9; 14 x 18 m) or individual boxes (BOX, n = 10; 3.6 x 4.3 m) during a 12-week pretraining programme. Horses were kept on straw and were fed concentrates and hay twice daily, water was always available. All stallions had daily access to outdoor paddocks, either individually or as a group. Using established methods, diurnal salivary cortisol (Kuhl et al., 2016) and heart rate (Schmidt et al., 2010) profiles were determined when stallions were transferred from pasture to their respective stables and once weekly for 12 weeks thereafter. Body weight (BW) and BCS, skin injuries as well as trainer scores were assessed once weekly. The trainer assessed if horses appeared to be tired, unmotivated, overstrained, stressed or showed signs of muscle strain with scores from one (not true) to five (true) for each parameter. Statistical analysis was performed with the SPSS statistics programme (Version 29). Non-scored data, after testing for normal distribution and homogeneity of variance, were analysed by repeated measures ANOVA with time as within subject and housing system as between subject factors. Scored data were analysed by Mann-Whitney-U-test between groups and Friedman-test over time.

**Results**: The BW of stallions decreased for two weeks after stabling (*P* < 0.001) and increased thereafter. The decrease was more pronounced in BOX versus GROUP stallions (*P* < 0.05; week 2 GROUP 75±12, BOX 68±18% of initial weight). The BCS increased over time (*P* < 0.001) but did not differ between groups. Salivary cortisol concentration increased immediately when stallions were stabled (*P* < 0.001). This increase was more pronounced in GROUP than BOX stallions (*P* < 0.01, peak concentrations GROUP 5.5 ± 1.7, BOX 3.0 ± 0.5 ng/ml, means). Thereafter, in both groups, a diurnal rhythm was established with higher cortisol concentrations in the morning and a decrease throughout the day. On individual days, cortisol concentrations were transiently elevated in GROUP but not in BOX stallions. Like cortisol, HR increased transiently at stabling (*P* < 0.001, peak values GROUP 84 ± 3, BOX 67 ± 5 beats/min). During the following 12 weeks, elevated heart rates were occasionally observed in GROUP but not in BOX stallions. Scoring of the stallions´ temperament and behaviour by the trainer was not different between groups but changed toward better scores during the 12 weeks of pretraining. Injuries and skin lesions were more evident in GROUP than in BOX stallions (*P* < 0.001, total number of lesions per animal GROUP 50 ± 16, BOX 26 ± 13) but the number of lesions decreased during the 12-week study period (time and group x time *P* < 0.001). Over 90% of the injuries were superficial skin abrasions.

**Conclusions**: Two-year old Sport Horse stallions presented a transient stress response when transferred from pasture to stables. This stress response was more pronounced when stallions were housed in groups compared to individual boxes. Throughout the 12-week study, occasional increases in cortisol and HR indicative of a marked arousal occurred in GROUP but not BOX stallions. Skin lesions were more frequent in GROUP than in BOX stallions. Stallion behaviour and social interactions in the stable are analysed from video recordings in additional studies. Our study suggests that both group housing and individual housing of two-year-old stallions during pretraining is acceptable when stallions are regularly exercised and have daily access to outdoor paddocks.

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