Journal of Equine Veterinary Science 31 (2011) 417-425

Journal of Equine Veterinary Science

journal homepage: www.j-evs.com

Original Research

Temporary Turnout for Free Exercise in Groups: Effects on the Behavior of Competition Horses Housed in Single Stalls

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Keywords:
Horse
Turnout
Behavior
Single stall

A B S T R A C T

In Germany, most competition horses are housed in single stalls and free exercise is not permitted in many cases. The reason for not allowing free exercise is mostly the risk of injury. Additionally, opinions exist that the horses' demand for exercise is fulfilled by training and that the horses' willingness to perform is negatively influenced by free exercise. In the present study, three turnout practices were investigated with regard to their effect on the behavior of four horses: daily training without free exercise (no turnout), 2-hour turnout (for free exercise) before training, and 2-hour turnout after training. The aim of this study was to determine any differences in the horses' behavior between the three treatments. The horses' behavior in the stable was observed through video recordings. The behavior during turnout was observed directly and during training was evaluated by the riders with the aid of a questionnaire. Additionally, the distance covered during turnout was measured by Global Positioning System devices. The behavior within the stall was more restless in the treatment without turnout—which became apparent in significantly more frequent changes between behaviors as compared with the treatments with turnout. The results of Global Positioning System measurement during turnout showed a significantly shorter distance covered when horses were trained before they were turned out compared with turnout before training. If the horses were turned out after training, they also showed less trotting and cantering and more dozing. The horses' willingness to perform was not significantly different between the three treatments.

1. Introduction

In Germany, most competition horses are housed in single stalls, in many cases without any opportunity for free exercise outside the stall [1]. This way of life constricts the natural behavior patterns of a horse to a great extent. In the wild, horses spend a maximum of 16 hours a day foraging for food, which generally happens in a slow and steady walk [2,3]. Trotting is performed in exploration and display behavior in reproduction. Cantering is demonstrated only for short times in flight or playing behavior [4]. This is why the German guidelines for the evaluation of equine housing systems regarding aspects of animal protection explicitly state that horses housed in single stalls need exercise according to their physiological requirements for several hours a day [5]. These guidelines also point out that controlled exercise is not able to replace free exercise. In practice, the limitation of free exercise, especially in competition horses, is widespread and mostly justified by the concomitant risk of injury. Furthermore, there are assumptions that the demand of exercise in the horse is satisfied by training or that free exercise reduces the willingness of the horse to perform. As a consequence of a life

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0737-0806/$ - see front matter © 2011 Elsevier Inc. All rights reserved.
doi:10.1016/j.jevs.2011.01.006

predominantly spent in stables, many horses suffer from diseases of the musculoskeletal system [6-8] and respiratory system [9,10], as well as abnormal behavior [11-13].

As behavior is a consequence of motivational states, behavior quantification indicates the intension of motivation in the animal. Therefore, to the experienced observer, the behavior of an animal provides information on the state of its well-being, and thus on the animal welfare qualities of a particular housing system [14]. Earlier investigations have revealed that locomotion activity during turnout is reduced if horses are trained in a circular horse walker before turnout as compared with no training at all [15]. It was concluded that training is able to partly fulfill a horse's exercise requirements. Furthermore, it was found that horses behave much quieter during turnout if it happens daily compared with turnout once a week [16]. Caanitz et al [17] observed that horses that were trained on a treadmill five times a week spent more time lying down at night as compared with a group that was not trained.

The aim of the present study was a systematic investigation of the influences of three turnout practices on the behavior of a group of competition horses housed in single stalls. As they are widely used in Germany, the turnout practices "2-hour turnout before training" (TBT), "2-hour turnout after training" (TAT), and "training without turnout" (no turnout = NT) were selected. The behavior patterns of the horses in the stable, during turnout and training were considered so that it could be revealed which of the investigated treatments combine both the horses' and the riders' requirements in the best way possible.

2. Materials and Methods

2.1. Location of the Study

The research was undertaken in a stable in Settmarshausen (county of Goettingen, Lower Saxony, Germany) in the period between May 11, 2008 and June 19, 2008. The stable contained 24 single stalls (size: 3.00 m × 3.80 m) in two rows, with an aisle (width: 3.00 m) in the middle (Fig. 1). The stalls were separated by 1.20 m hardwood walls with 2.05 m vertical lattice bars (distance between bars: 5.80 cm) on top. The fronts had sliding doors (width: 1.50 m) made up of the same material. The brick walls of the stable building formed the back of the stalls. There was no way in which the horses could possibly put their heads outside or into the aisle. The stable ceiling height was 3.26 m. Along the long sides of the stable, 28 windows (size: 1.00 m × 1.00 m) in a row formed light bands underneath the ceiling. The windows were left open slightly for ventilation. Two doors (size: 3.00 m × 3.00 m) at the ends of the aisle were open day and night. Each stall was equipped with a feeding trough for concentrates, an automatic drinking trough, and a salt block. Four stalls situated next to each other were used for the investigation (Fig. 1).

Next to the stable, to the east, was a 35 m × 50 m sand area used for riding and turnout. The area was bordered by a wooden fence (height: 1.5 m), with an electrical band on top. For the study, a turnout area of 10 m × 35 m was separated by an electrical fence. This size was selected to give the horses enough space for free exercise (walk, trot, and canter were possible; the German guidelines advise a minimum of 150 m^2 for two horses [5]) and to allow training of the horses in the remaining area.

During the investigation, the air temperature varied between 9°C and 23°C and the relative humidity varied between 51% and 99%.

2.2. Animals

Four German Warmblood Horses (height between 1.63 and 1.70 m; weight between 600 and 650 kg) were used for the investigation. All four horses were schooled in dressage and show jumping and—except for horse 3—were deployed in competitions in one of these disciplines. Horse 1 (H1) was a 9-year-old Hanoverian mare, who had competed in dressage up to intermediate class and was schooled in show jumping at novice level. Horse 2 (H2) was an 8-year-old Hanoverian mare, who had competed in show jumping up to advanced class and was schooled in dressage at intermediate level. Horse 3 (H3) was a 5-year-old Hanoverian gelding, schooled in dressage and show jumping at prenovice level. Horse 4 (H4) was an 11-year-old gelding from Saxony-Anhalt, who had competed in show jumping up to advanced class and was schooled in dressage at intermediate level. All four horses were housed

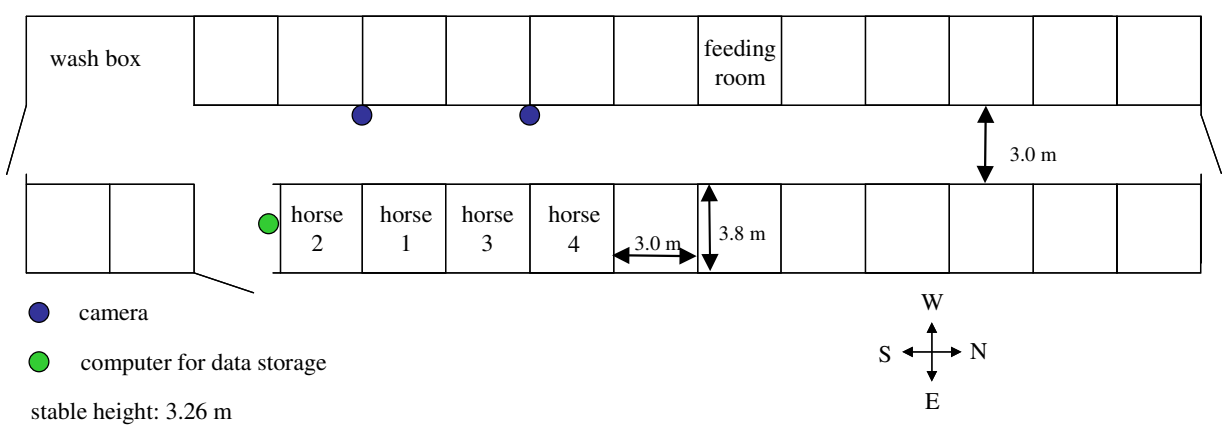

Fig. 1. Outline of the stable including the positions of the experimental stalls (horses 1 to 4) cameras, and computer.