**Titel**

Bewegungsaktivitäten und -verhalten von Pferden in Abhängigkeit von Aufstallungsform und Fütterungsrhythmus unter besonderer Berücksichtigung unterschiedlich gestalteter Auslaufsysteme

**Titel(englisch)**

"The locomotion activity and behaviour of horses depending on the system of stabling and feeding rhythm, and taking various of loose runs into particular consideration"

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**Abstract**

According to the literature review in the first part of the investigation it was worked out, that the high daily movement activities of free ranging horses (up to 16 hours) are mainly due to the smooth running in line with the feeding procedure as well as to the look up of the feeding places and drinking places. Many authors point out the importance of adequate movement of horses as a preventive action to reduce risk of disease, e. g. damage of locomotive system.One objective of the investigations carried out was to find out which factors influence the voluntary locomotion of horses within the multi-room group stabling system with loose runs. The hypothesis assumed was that the rhythm of feeding and the type of loose run the horses had, were the instrumental factors influencing behaviour. For this purpose, seven different experiments were carried out in the model system for multi-room group stabling at the Institute for Research into Agricultural Building systems with a well-integrated group of horses consisting of two Haflinger mares and two Haflinger geldings. During the first four experiments, the feeding rhythm (4 x 1,5 h and 6 x 1 h) with a constant total feeding time and the distance between the function areas, manger and lying cubicle/drinking trough (18.2 m and 43 m) were varied. Movement activity was measured using a mechanical pedometer. The animals were observed by means of video recordings to allow locomotion and social patterns to be monitored as indicators for animal keeping in suitable conditions. The feeding rhythm had a highly significant (p < 0.01) influence on movement activity and a significant influence (p < 0.05) on stepping frequency at a walking pace. With a short distance between the function areas, the feeding frequency led to an increase in movement activity of 42 %; with a longer distance between the function areas, the rise in movement activity amounted to 29 %. Feeding frequency however, does not affect the number of changes between function areas.Lengthening the distance between function areas did not significantly affect movement activity. However, an increase in movement activity of 21 % could be achieved by extending the distance when feeding frequency was reduced. Stepping frequency at a walking pace and how often function areas were changed could be significantly (p < 0.05) influenced by thedistance. Extending the distance led to an increase in stepping frequency at a walking pace, yet the frequency of moving between function areas declined.An influence of the factors examined on the frequency of stepping at a trot and at a gallop as well as on social activities divided into cohesive, i. e. attractive and repulsive behaviour could not be proven.An increase in the frequency of feeding was observed to be a decisive factor in increasing the locomotion activity of horses kept in multi-room groups with loose runs. When feeding took place six times for one hour, approximate 4.8 km per day were travelled independent of the distance between the function areas. This corresponds, compared to the movement which the horses undertook in a control experiment where they were only kept on a pasture (approximate 8.4 km), to a proportion of 57 % of the movement undertaken in a natural environment. Although the horses are also not able to combine feeding and movement during loose keeping, as corresponds to their natural behaviour, a good degree of compensation at least can be created within loose keeping combined with high feeding frequencies. This also, which is important for practical implementation, is possible in loose keeping systems where space is limited.Three further experiments were to show how far spatial restrictions would lead to a "blockage of locomotion" within the stabling system. For this, the group of Haflingers was stabled in two differently sized loose-run systems (firstly 104.6 m2 and subsequently 195.7 m2).They were additionally let out onto the pasture for three hours daily. To provide a comparison, a group of horses kept in individual stables and which were all well accustomed to each other, were let out to pasture for three hours daily. Whilst on the pasture they were directly observed for 20 minutes. Movement activity during the time on the pasture was recorded by means of mechanical pedometers. It was seen from the Haflinger group that the size of the loose run had a significant (p < 0.05) influence on movement activity on the pasture. During the stabling phase in the smaller loose-run system, activity during the pasture time increased by 38.6 compared to the phase of stabling in the larger loose-run system. In addition, there were distinct differences in the distribution of the three paces between loose-run stabling and the time on the pasture. An average of 32 % of steps on the pasture were at a trot or gallop; within the loose-run system, it was only an average of 2 % of the steps. The horses from individual stables, contrary to expectations, did not show a strikingly higher degree of activity during their three hours at pasture than the Haflingers from the loose-run system. The degree of attractive and cohesive behaviour seems higher for the horses from single-cubicle stabling than for those in loose-run, group stabling.