# Use and stress influence of horse walkers

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**Key words**
Horse, horse walker, stress, cortisol, heart rate, injuries

**Aim of the study**
Up to date, there exist no scientific data on the use of horse walkers in equids. The aim of this study was therefore to investigate objective measures relevant to the welfare of horses in walkers: Firstly, the stress response of horses in walkers with and without electricity use on the separations between horses was compared. Secondly, a benefit and injury statistic was established by questionnaire evaluation.

**Material and methods**
12 horses at the age of 2.5 to 3.5 years, which had never before been in a horse walker, were trained daily at the same time during 3 weeks in a covered horse walker. All horses walked in the first week daily for 45 minutes (6km/h) without electricity. In the second and third weeks, the same program was repeated in a cross over design: in the second week, horses 1 to 6 and in the third week, horses 7 to 12 were walked with electricity (3.7kV) on the separations between horses. In the fourth week, the horses spent 45 minutes per day in a paddock. In order to evaluate the stress response, blood samples were periodically (one hour before the program, at the start, in the middle and the end, 5 min and one hour after the program end) collected to measure serum cortisol levels and heart rate was during exercise continuously monitored with the Polar® system. In addition, behavior was evaluated by ethogram focusing on specific behavioral patterns, such as bucking, kicking, turning a circle, changing the separations, trotting, etc..
A questionnaire including questions about details of the model of the walker used, its use and associated benefits and injuries was sent to 210 stables with horse walkers.

**Results and significance**
Neither the cortisol levels nor of the heart rates showed a statistically significant difference between horses moved in the horse walker, with and without the use of electricity. Highest cortisol and heart rate levels were recorded during the first week when the horses were getting habituated to the walker. Cortisol levels during the forth week in the paddock are comparable to those measured in the horse walker. The heart rates showed a decreasing trend over the four weeks. The behavior of the horses turned out to be very different between individuals. A significant difference could be observed regarding spontaneous compartment changes: while this happened on several occasions, mainly during the first week and before the first use of electricity, no horses changed compartments in the periods when electricity was used and then even afterwards without the use of electricity.
The questionnaire evaluation, based on the data of 67 responding stables, which included 1409 horses, indicated that there exist a variety of different horse walker models in Switzerland, but that the use of them is very similar. For example, all of the 67 stables let their horses only walk and never trot in the machine. Overall, 61% use an exercise program of 31-50 minutes duration; 51% make use of electricity individually depending on the horses temperament and only for a short time of the program; 33% generally use electricity for the full program. Eighty-one % had never made any bad experience with the use of electricity in horse walkers, while 19% of the responders had encountered problems such as panic or fear reactions of the horses. Accidents were reported but were relatively rare: 32 horses (2.3% of 1409) had been injured in a walker, in 50% of these cases because of bucking, kicking with subsequent injury at elements of the horse walker. In 53% of the cases wounds were superficial, 29% had deep lesions, 6% horses injured their eyes and 6% had a tendon injury. One horse had a fracture because of slipping and falling on the wet ground.
The results from this study indicate that the use of electricity in horse walker causes no major stress in horses. It was not associated with injuries, in the contrary, it and can be helpful to prevent problems due to dangerous compartment changes. It is however important to supervise horses if electricity is used. To prevent injuries, a good horse walker equipment and construction is essential.

**Publications, posters and presentations**
4th Annual Meeting of the Swiss Network of Equine Research 30th April 2009.
Further publications in scientific revues and in horse magazines planned.

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