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Back health of the Swiss riding horse population

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Key words
Equine welfare, orthopaedic disorders, back pain, saddle fit, owner awareness, riding skill, gait analysis

Aim of the study
The aims of the study were (1) to determine the prevalence of back disorders, saddle fit problems, and other orthopaedic health issues in the Swiss riding horse population, (2) to relate these issues to other assessed factors to better understand their origin and interrelationship, and (3) to determine the awareness of owners towards these issues in order to find effective ways to increase owner awareness and improve the welfare of Swiss riding horses.

Material and methods
Participants for this study were recruited through a public announcement of the study in various media. Owners were invited to complete an online survey to provide information about their horse's husbandry, equipment, and training. They were invited with their horse to a test day at one of eight locations in Switzerland where the following data was collected from 237 horse-rider-pairs: a chiropractic assessment of the horse, assessment for gait irregularities, back pain, and saddle fit, a physiotherapeutic assessment of the rider, a motion analysis of horse and rider, and a saddle pressure measurement during riding. Seventy of the participating horses underwent a more detailed examination at the Vetsuisse Faculty in Zurich, where diagnostic imaging provided information on pathological changes of the back. The horse's movement patterns and limb loading were quantified on an instrumented treadmill. Data analysis focussed on determining the prevalence of (potential) health problems and investigating correlations between the assessed parameters.

Results and significance
Of the investigated horses, one third showed signs of back pain, more than half of them showed gait irregularities, and one third had been diagnosed with orthopaedic health issues in the past. Three quarters of the saddles had at least one fit problem. One fifth of the owners reported that their horse sometimes showed signs of lameness and 95% of the owners stated that their saddle had an ideal fit for their horse. The discrepancy between the owner's perception and the clinical examination illustrates the need to improve owner awareness for the assessed problems.
With regard to saddle fit, we could demonstrate that the posture of the rider and asymmetric movement patterns of the horse can contribute to an asymmetric pressure distribution below the saddle. When interpreting the pressure patterns measured by electronic mats it is therefore crucial to consider all contributing factors, i.e. saddle, rider, and horse.
Our data also revealed that saddles with a narrow twist cause higher pressures and larger areas of high pressure at the base of the withers compared to saddles with a straight saddle tree.
The analysis of the data obtained by the physiotherapeutic assessment of the riders revealed that endurance, strength, and symmetry were positively correlated with riding skill (quantified in the form of grades given by dressage judges during the riding test). These parameters therefore appear to be important components of riding skill.

Beside the results that have already been published, the data are still analysed and prepared for publication within the framework of one Habilitation thesis, one PhD, four doctoral and three Master theses. These projects focus on the objective quantification of riding skill based on the motion analysis data, the correlation between back pain and diagnosed structural pathologies, and the correlation between objective and subjective lameness assessments.

Publications, posters and presentations

Dittmann, M.T.; Latif, S.N.; Hefti, R.; Hartnack, S.; Hungerbühler, V.; Weishaupt, M.A. Husbandry, use, and orthopaedic health of horses owned by competitive riders compared to horses owned by leisure riders in Switzerland. Prepared for submission to the Equine Veterinary Journal.

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Graf, A. (2019) Wie nützlich ist die Algometrie bei der klinischen Untersuchung der Rückengesundheit von Pferden? Masterthesis, Vetsuisse-Fakultät Zürich.

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Hungerbühler, V. (2018) Die Bedeutung des Sattels für die Rückengesundheit des Pferdes. Masterthesis, Vetsuisse-Fakultät Zürich.

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Gunst, S., Dittmann M.T., Arpagaus S., Roepstorff C., Latif S.N., Klaassen B., Pauli C.A., Bauer C.M., Weishaupt M.A. „Asymmetrien von Reiter und Pferd und deren Einfluss auf die Satteldruckverteilung im Stehen und im ausgesessenen Trab". 14. Netzwerktagung Pferdeforschung, Avenches, 10. April 2019.
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Latif, S.N. "Gutes Reiten: Braucht's sonst noch was?" Facharena PFERD, Bern, 1. Mai 2019.

Latif, S.N. "Saddle Fit" Winter Course, Malmö, SWE, 31. 1.-3. Februar 2019

Latif, S.N. „Brennpunkt Pferderücken: Wo Reiter, Sattel und Pferd eine Einheit bilden (sollten)". ExpoHorse, Zürich, 1. Dezember 2018.

Latif, S. N. „Die Relevanz einer guten Sattelpassform". Boehringer Fortbildungveranstaltung; St. Florian, A, 17. Oktober 2018.

Latif, S.N. "The importance of proper saddle fit". Alius CPD Equine Sports Medicine: Rehabilitation of the Equine Athlete; Dubai, UAE, 5.-6. Oktober 2018.

Latif, S.N. "The importance of the twist". Stammer Kinetics; Sittensen, DE, 21.-23. September 2018.

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