

Press handout “CHIO Aachen Scientist Circle”

What are the aims of the “Scientist Circle”?

- The initiative focuses on the welfare of sport horses and brings together various equine experts and leading scientists from Germany and Switzerland.
- The examination of animal welfare, as well as transparency and acceptance of equestrian sports in society, are at the centre of attention.
- The central question: How are the sport horses doing at the CHIO Aachen international show event and what exactly do they need to ensure their welfare in the long term?

What is tested in this project and how?

- Analysis of movement, feeding, drinking, and lying behaviour in the box using an AI-based camera system from ACARIS. In the home stable and on the show grounds in Aachen, the boxes of selected horses are equipped with cameras, and an AI-based software analyses how the horses behave in the stall – before, during, and after the CHIO Aachen.
- The horses’ heart rates are monitored using a girth belt, and key stable air factors such as ammonia and dust content are analysed, as well as light intensity, noise level, and temperature in the stables, all of which are determined and analysed using sensors.
- The cortisol level in the faeces of these horses is also analysed (cortisol is released during physical and psychological stress). At the CHIO Aachen, faecal samples are regularly taken. The results at the CHIO Aachen are compared with the data collected from the participating horses in their home stable before and after the show. Doctoral student Leonie Teschke is directly involved in evaluating the data.

What findings has the study produced so far?

- The scientists are optimistic about the initial analyses. They observed positively that the horses at the show in Aachen did spend longer periods in the box than in the home stable, but they were kept busy and exercised a lot.
- The median recorded lying times across all three examined situations show only minor fluctuations. However, the data show a significant spread especially after the show in the home stable, indicating that the lying behaviour of each horse is very individual and can only be generalized to a limited extent.
- The cortisol levels, which were measured during the horses' stay in Aachen, increased on the day of the competition, while the remaining days were at an inconspicuous level. The transport and training in Aachen had no noticeable effects on the cortisol levels of the horses studied.

- Video monitoring using the AI camera system revealed that the horses spent 10 to 17 hours per day in the box at the home stable and about 21 hours per day during their stay in Aachen.
- The analyses of stable air factors showed no abnormalities in any parameters (ammonia content, humidity, air velocity, temperature, and dust content) and were well below the guideline values for the assessment of horse husbandry from an animal welfare perspective.
- There was room for improvement in terms of light intensity, but the noise level was acceptable.
- **IMPORTANT:** Interpretation of the data is not yet meaningful; the sample size must be increased and studies conducted over several years of the CHIO Aachen.

What are the researchers investigating this year?

- In 2026, 8 jumping horses will be included in the study. At the FEI World Championships in August, further non-championship horses will be included in the study.
- As part of the FEI World Championships, the second edition of the CHIO Aachen Science Lounge will take place, bringing together various experts for talks and discussions.

Which riders are taking part in the CHIO Aachen 2025?

- ACARIS cameras, cortisol samples & heart rate:
 - Yuri Mansur (BRA)
 - Luciana Diniz (BRA)
 - Marcus Ehning (GER)
 - Jérôme Guery (BEL)

In each case, several horses will be examined, making a total of 8 horses.

Which scientists and experts are involved in the project?

- Birgit Rosenberg, CHIO Aachen Sports Director
- Prof. Dr. Dirk Winter, Dean of Equine Studies at the Nürtingen-Geislingen University of Applied Sciences
- Dr. med. vet. habil. Miriam Baumgartner, expert for horse husbandry and horse behaviour, Swiss National Stud Avenches, Agroscope
- PD Dr. Dominik Burger, expert in performance physiology and sports medicine – Swiss Institute of Equine Medicine ISME at the University of Bern in Avenches
- Prof. Dr med. vet. Konstanze Krueger-Farrouj, Professor of Equine Husbandry at the Nürtingen-Geislingen University of Applied Sciences
- Dr. rer. nat. Arne-Rasmus Dräger, expert in artificial intelligence and developer of AI-based camera systems for monitoring the health of horses

- Dr. Monica Venner, Privatdozentin at the TiHo Hannover, PhD, specialist veterinarian for horses, Dipl. ECEIM, FEI Permitted Treating Veterinarian
- Leonie Teschke, PhD student at the Nürtingen-Geislingen University of Applied Sciences and Arts
- Prof. Dr. Ralf Galuske, Lab - Biology - TU Darmstadt, focus: Systems Neurophysiology, Systems Neuroscience, interaction between brain areas, structure and function in the mammalian brain and in particular in the equine brain, systems neurophysiological investigations in a behavioural context
- Prof. Dr.-Ing. Nicolas Bennerscheid, Professor of Process Control Technology at the TH Köln, University of Applied Sciences. Focus: modern sensor technology, data-based movement analysis and methods of pose estimation using camera technology for the development of objective indicators for animal welfare - especially in equestrian sports with a focus on horse and rider in motion

How long will the study continue at CHIO Aachen?

- The Scientist Circle on the topic of animal welfare is designed for the long term and does not end with the completion of the dissertation.
- With around 30 to 40 horses over a total period of three years, it should be possible to achieve solid results.
- Since an event like CHIO Aachen involves a multitude of factors that can influence the well-being and performance of sport horses, scientific studies must continue to be conducted in the future to generate a solid data basis - for the benefit of the horses.

Have the veterinary office and the FEI been informed about the study?

- Yes. The Aachen Veterinary Office is very positive about the project at CHIO Aachen and is interested in the results.
- The FEI Veterinary Commission has been informed and welcomes the project.
- The NRW State Office for Nature, Environment and Consumer Protection (LANUV) has also been informed. The project has also been welcomed here. Furthermore, the veterinary authorities of the federal states have been involved.

Who can access the cameras at the CHIO Aachen?

- Scientists of the "CHIO Aachen Scientist Circle"
- Viewing of the results for riders