



Thermographic Images as a Diagnostic Tool for Equine Headshaking Syndrome

L.M. Stange¹, J. Krieter¹, I. Czycholl²

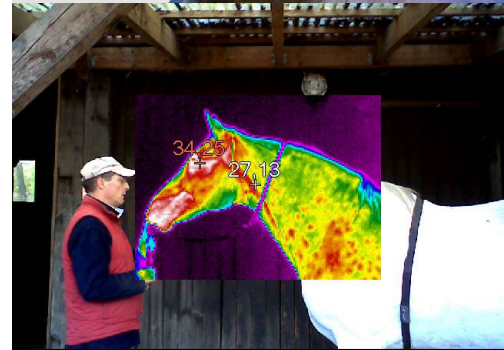
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Definition of EHS

Equine Headshaking Syndrom (EHS)

Intermittent involuntary throwing or excessive nodding of the head and neck without external stimulus





Categorisation of EHS

Symptomatic Headshaking

Primary disease



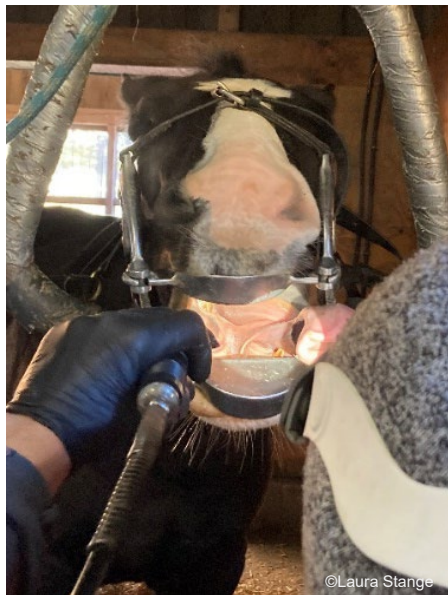
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Categorisation of EHS

Symptomatic Headshaking

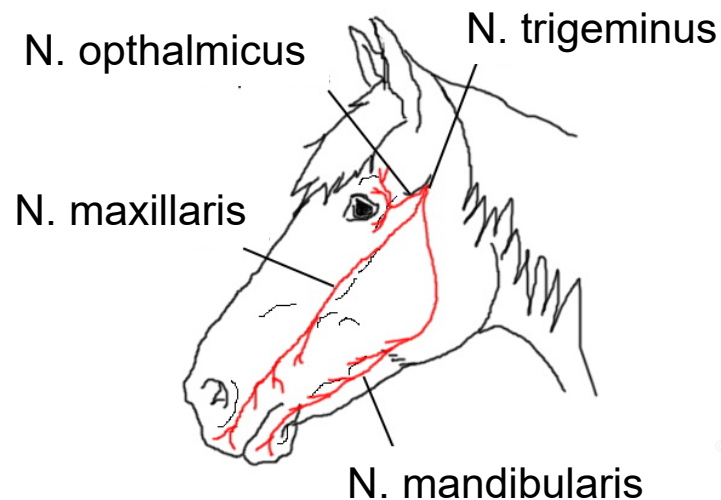
Primary disease



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Idiopathic Headshaking

Trigeminus-mediated



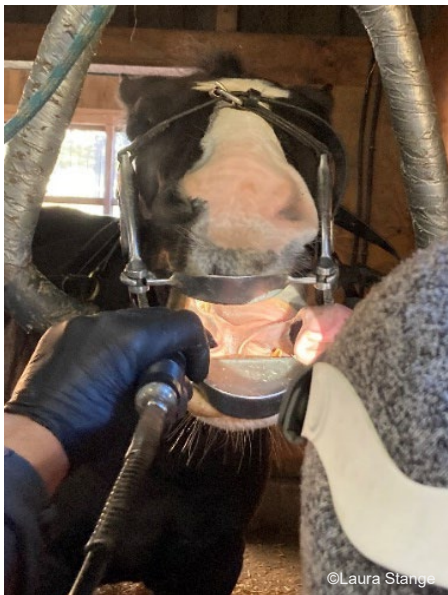
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Categorisation of EHS

Symptomatic Headshaking

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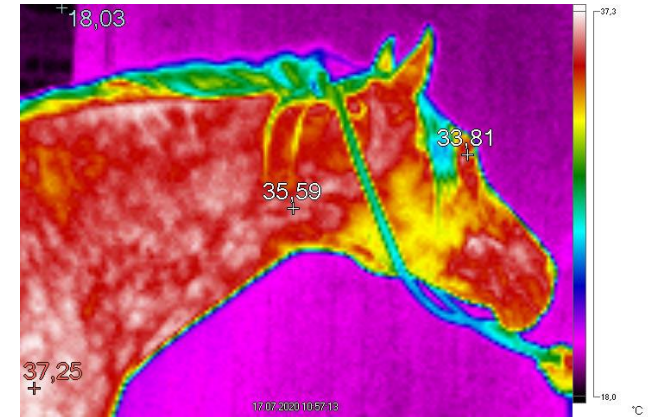
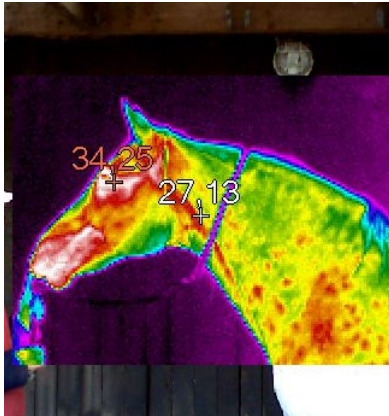




Thermographic imaging

Inner eye temperature

linked to stress and pain in horses (Kim and Cho 2021; Ijichi et al. 2020)

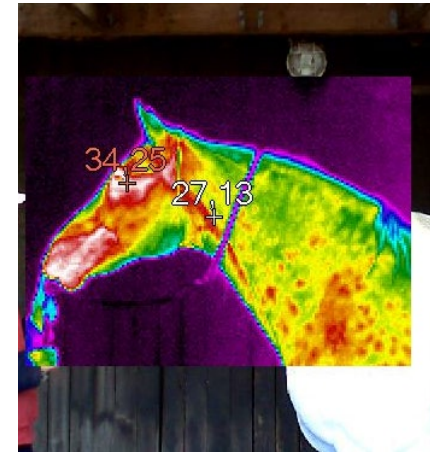
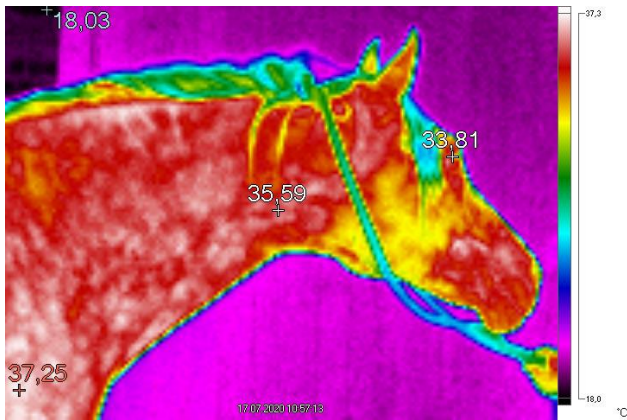




Aim of the study

Aim

Investigating, whether thermographic imaging could serve as a diagnostic tool for equine headshaking syndrome.





Study design

Aim

Investigating, whether thermographic imaging could serve as a diagnostic tool for equine headshaking syndrome.

16 Headshaker

11 Gelding

5 Mare

12.1 years

12 Warmbloods

4 Ponies



12 Control horses

8 Gelding

9 Mare

14.3 years

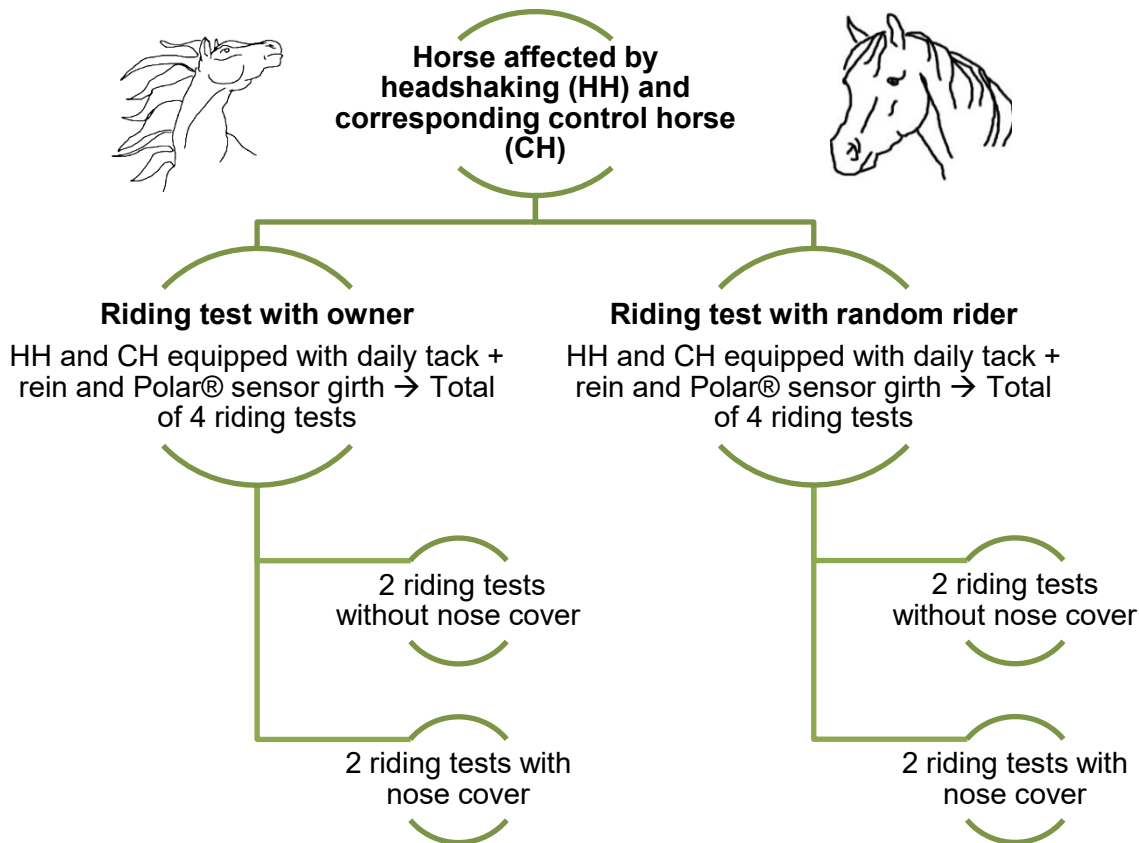
7 Warmblood

5 Ponies





Study design





Statistic model

SAS® 9.4 (SAS Institute Inc., 2017)

Linear mixed model

Dependent variable

→ Difference in eye temperature

Fixed effect

→ Presence of headshaking

→ Breed

→ Gender

→ Rider

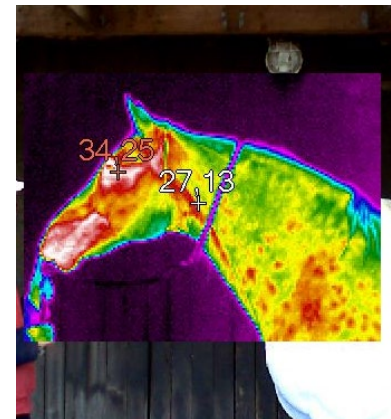
Covariable

→ Age

→ Temperature

Random effect

→ Horse (breed)





Statistic model

SAS® 9.4 (SAS Institute Inc., 2017)

Linear mixed model

Dependent variable

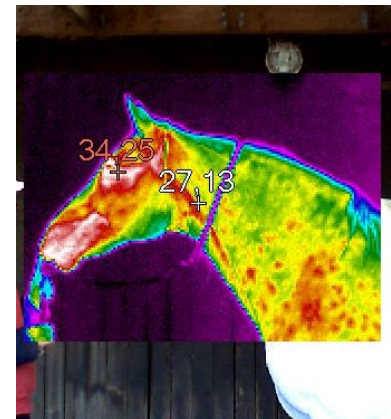
Fixed effect

- Presence of headshaking
- Difference in eye temperature
- Breed
- Gender
- Rider

Covariable

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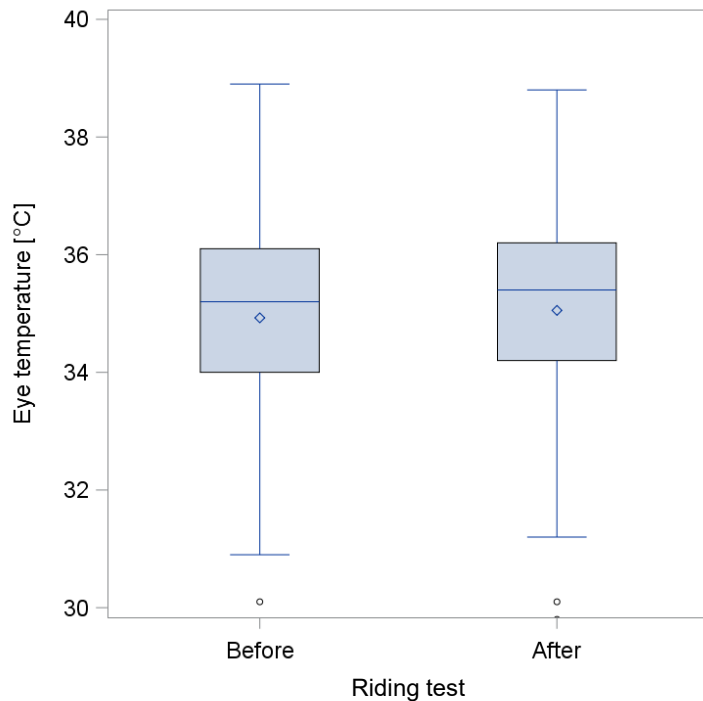
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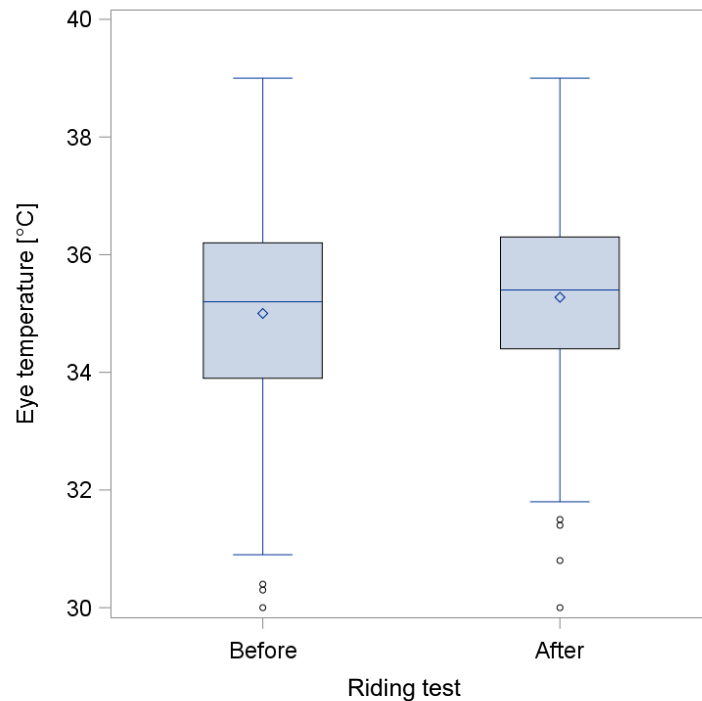


Results of thermographic images

Absolute eye temperature of the left eye



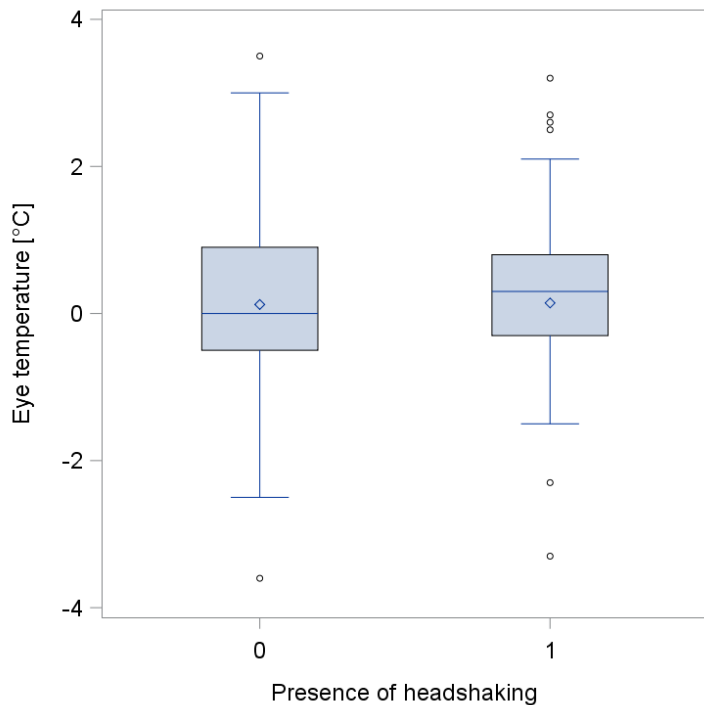
Absolute eye temperature of the right eye



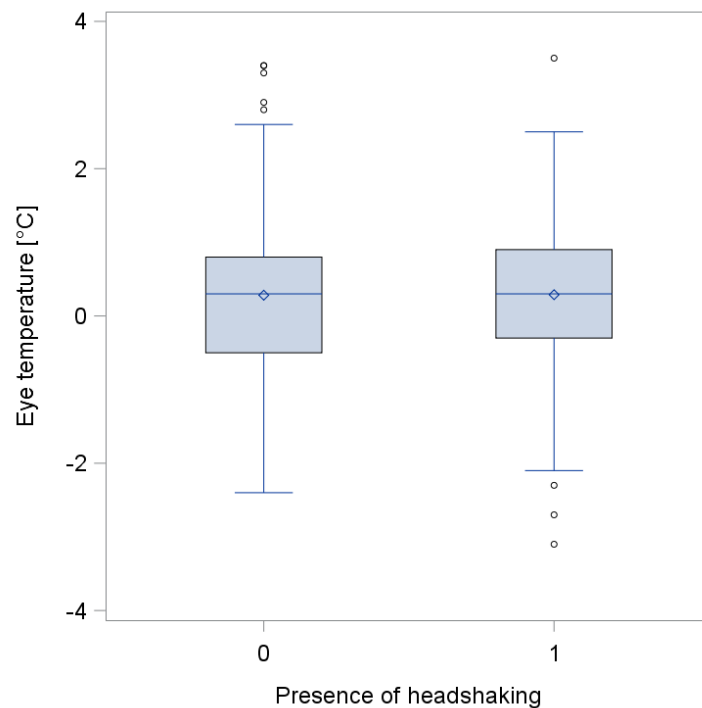


Results of thermographic images

Difference in eye temperature (left eye)



Difference in eye temperature (right eye)





Summary

No significant differences were observed in thermographic images between headshakers and control horses.





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No significant differences were observed in thermographic images between headshakers and control horses.

In order to be able to use thermographic images, interference factors must be taken into account. These include standardised **distances** and **recording angles, lighting conditions, weather influences** and other **environmental factors**. Standardisation proved to be difficult in this study due to the long observation period and thus different climatic conditions.



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No significant differences were observed in thermographic images between headshakers and control horses.

In order to be able to use thermographic images, interference factors must be taken into account. These include standardised **distances** and **recording angles, lighting conditions, weather influences** and other **environmental factors**. Standardisation proved to be difficult in this study due to the long observation period and thus different climatic conditions.

The use of thermography proved to be impractical and showed no effect in the experiment.



Thank you for your attention!

Aus dem Institut für Tierzucht und Tierhaltung
der Agrar- und Ernährungswissenschaftlichen Fakultät
der Christian-Albrechts-Universität zu Kiel

Overview of studies on aetiology and the current situation of equine headshaking syndrome in different European countries

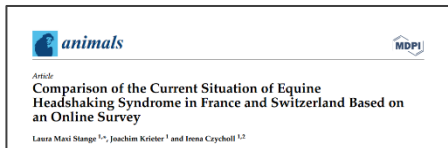
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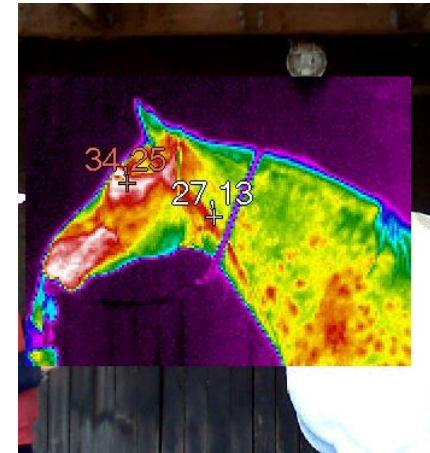
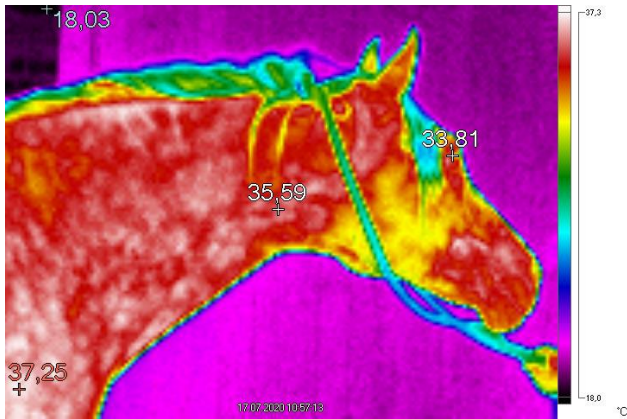




Thermographic imaging

Inner eye temperature

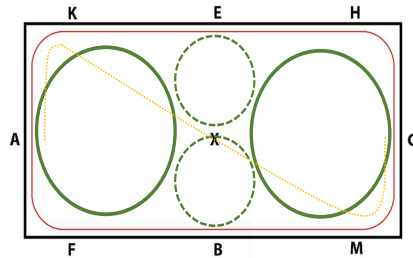
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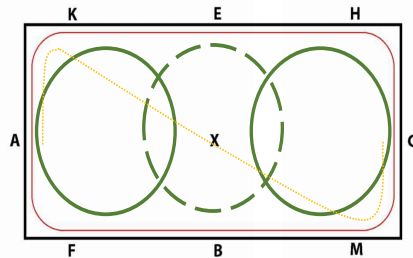
Riding test

Sequence of riding tests



Walk on both hands including riding figures (circle, volts) and change of hands.

Trot on both hands with riding figures and change of hands in rising trot.



Canter on both hands with riding figures (circle, middle circle) with change directions across the diagonal (transitions in trot).



Nose cover

