

**THE USE OF INFRA-RED THERMOGRAPHY TO
MONITOR AND PREDICT LAMENESS
IN RACING HORSES**

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This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Summary

Thermography has been studied as an effective tool for lameness detection. The main advantage of thermography is predicting lameness before clinical signs occur. Ultrasonography, scintigraphy, radiography, arthroscopy, magnetic resonance imaging (MRI) and computed tomography (CT) are more frequently used than thermography, which is only used by minority of veterinarians and trainers.

The main objective of the study was to assess effectiveness of thermography in predicting, detecting and monitoring lameness, and assess if thermography can be valuable tool for trainers in monitoring a horse's limbs.

In the main study 14 Polish Halfbred (sp) and 14 Arabian (oo) Horses from the Racing Center Partynice (Wroclaw, Poland) had thermographic images taken of lower part of the limbs once per week for 6 weeks. In the additional study 1 Polish Halfbred Horses from other yards near Wroclaw, which presented problems of lower part of the limbs, had thermographic images taken. The results were analyzed using a Student's t test to compare temperature differences between injured and non injured limb of each horse. The level of significance was determined as (0,05), great significant (0,01), most significant (0,001).

In the main part of investigations, 23 horses showed no changes in their soundness, and no lameness or associated problems were reported for these horses over the period of investigation. The thermal images of those horses remained unchanged and normal. One of the remaining five horses lost soundness because of severe flexor tendon injury of the front limb, and four other horses demonstrated various degrees of the front limb overload, possibly associated with past injuries. In the additional study, one horse's thermal images allowed a period of lameness of front left limb to be predicted.

The investigations reported suggest that thermography images can be used in the field to detect changes in temperature of lower limbs. As such, this study indicates that it can be successfully used to identify and predict front limb's injury or overloads.

Thermography assessment proved to allow rapid assessment of horse's limbs in intensive training yards, with only minimal interference in yard routine and as such thermography can be recommended as a useful tool in monitoring horses' response to training and injury. In summary, the application of infra-red thermography to diagnosis of lameness in horses has been found very promising and useful by many authors and also, it is hoped, in a small degree by the present study.