Physiological Effects of Massage and DEEP OSCILLATION® on the Horse

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1 Introduction

There is a general lack of scientific research on the effects of physical therapies such as massage and deep oscillation[1] (low intensity and low frequency electrostatic fields) on the horse.

The aims were to investigate the effects of these treatments in a non-invasive manner on the horse.

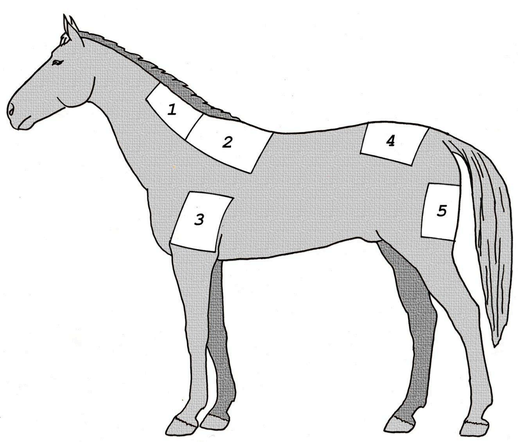


Figure 1 – Defined areas for massage and deep oscillation

2 Methods

- Four treatment methods were randomly allocated to each horse (n=20): control, massage, deep oscillation and deep oscillation control (not switched on). Massage was conducted by a Member of the Equine Sports Massage Association on five different areas (Figure 1) and deep oscillation was carried out on area 3 (Figures 1 and 2).

- Heart rate[2] (HR) data, infra red thermographic (IRT) images[3] (Figure 3) and saliva samples were collected both pre and post treatment. Saliva samples were analysed for cortisol.

- Data were analysed accordingly by either Student paired t tests or Mann Whitney U tests (significance of $p<0.05$).

Figure 2 – Deep oscillation being applied to area 3

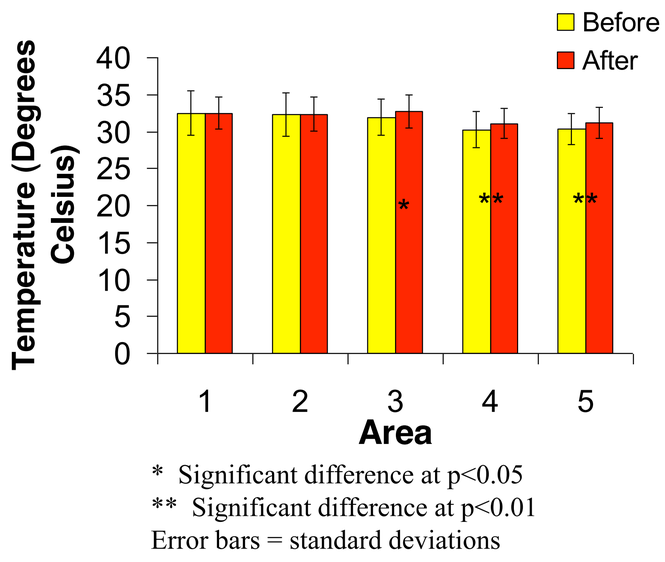
Figure 3 – Infra red thermographic image being taken

3 Results

- There was a slight but significant increase in mean surface skin temperature pre and post massage for different areas (Figure 4) which may indicate that vascular perfusion and local tissue metabolism are increased as these play a role in skin temperature (So *et al.* 1989).

- There were no significant differences in HR (37 bpm) for massage, in disagreement with various authors (Feh *et al.* 1993, McBride *et al.* 2004). There was a slight decrease in HR following deep oscillation, but activities on the yard affected HR.

- There were no significant differences in cortisol levels (mean 4.4 ng/ml (SD 1.67), contrary to results for humans following massage (Field *et al.* 1997).



* Significant difference at $p<0.05$
** Significant difference at $p<0.01$
Error bars = standard deviations

Figure 4 – Surface temperatures (^{0}C) following massage of each area

4 Conclusions

- IRT as a non-invasive tool has provided objective data on the increase in surface temperature on the horse following massage.

- The use of a control proved that the presence of a therapist did not influence either HR or cortisol levels. A control had not been used in many studies looking at the influence of massage on HR. Basal cortisol levels of unstressed horses were not reduced with massage.

- Deep oscillation showed a decrease in HR following treatment.

- Deep oscillation has previously shown positive results in humans for lymphoedema (Jahr *et al.* 2008) and for animals for wound healing (Mikhalchik *et al.* 2005).

- Further studies need to be carried out on other possible physiological effects of these treatments on horses.

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1. Physiomed Elektromedizin AG, Hutweide 10, 91220, Schnaittach/Laipersdorf, Germany.
2. Polar RS800C heart rate monitor, Polar, Helsinki, Finland
3. Mobir M4 thermographic camera, Wuhan Guide Infrared Technology Co Ltd, China.

References

Drust, B., Atkinson, G., Gregson, W., French, D., Binningsley, D. (2008) The effects of massage on intra muscular temperature in the Vastus Lateralis in Humans. *Int J Sports Med* 24, 395-399.
Feh, C. and de Mazieres J. (1993) Grooming at a preferred site reduces heart rate in horses. *Anim Behav* 43, 1191-1194.
Field, T.M., Sunshine, W., Hernandez-Reif, M., Quintino, O., Schanberg, S., Kuhn, C. and Burman, I. (1997) Massage therapy effects on depression and somatic symptoms in Chronic Fatigue Syndrome. *Journal of Chronic Fatigue Syndrome* 3, 43-51.
Jahr, S., Schoppe, B. and Reißhauer A. (2008) Effect of treatment with low intensity and extremely low frequency electrostatic fields (Deep Oscillation®) on breast tissue and pain in patients with secondary breast lymphoedema. *J. Rehabil. Med.* 40, 645-650.
McBride, S.D., Hemmings, A. and Robinson, K. (2004) A preliminary study on the effect of massage to reduce stress in the horse. *Journal of Equine Veterinary Science* 24:2, 76-81.
Mikhalchik, E., Titkova, S., Anurov, M. *et al.* (2005) Wound healing effects of deep oscillation®. *1st International Conference on Skin and Environment*, Moscow, St. Petersburg, 71.
So, Y.T., Aminoff, M.J., Olney, R.K. (1989) The role of thermography in the evaluation of lumbosacral radiculopathy. *Neurology* 39:1154-1158.

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