Title: Investigation into the effects of McTiimoney chiropractic treatment, Static Magnetic therapy and a combined treatment intervention on the Mechanical Nociceptive Threshold values in Thoroughbred Racehorses.

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Introduction Equine back pathologies are an ongoing concern within the equine industry, impacting negatively on performance and welfare longevity (De Heus et al., 2010). Research supports an effect of chiropractic treatment on Mechanical nociceptor Thresholds (MNTs) but only varied subjective evidence into the effects of equine static magnetic rugs. Increased MNTs suggest a reduction in sensitivity to musculoskeletal tenderness (Haussler and Erb, 2006). The aim of this study was to objectively assess the influence of McTimoney chiropractic compared with a static magnetic rug treatment and a combined chiropractic and static magnetic rug treatment on MNTs of the thoracolumbar musculature of thoroughbred racehorses. Pressure algometry was used as an established method for the measurement of MNT.

Material and Methods A controlled, randomised study using 40 sound, healthy 2 year old Thoroughbred race horses from the same yard and training schedule, (mean BW 470 +/- 20kg, mean wither height 163.6+/- 7.4cm) were randomly assigned into four groups of n=10, a control group (no intervention) and three treatment groups (chiropractic, magnetic therapy (rug containing 20x fixed uni-polar magnets with a 1000 gauss strength worn for 60min/day) and combined (chiropractic and magnetic)). Veterinary consent was obtained and treatments were undertaken by a qualified McTimoney animal practitioner. Whilst stood square, triplicate MNTs were measured 10cm lateral to dorsal midline at five bilateral anatomical sites along the thoracic and lumber musculature (T9, T13, T18, L3, L6) using a pressure algometer by a single examiner. Measurements were taken immediately pre and post treatment and at 1,7 and 14 days post treatment. Repeatability of MNT measurement was evaluated. Data was tested for normality by Komologorov-Smirnov test. Group data was analysed over time points using repeated measures ANOVA with post hoc tests. Significance was set at $p<0.05$.

Results There were no significant differences ($p>0.05$) between left and right mean MNTs for all measurement sites. All three treatment groups showed a significant increase in mean MNTs pre-treatment to day 14 ($p<0.001$). The control group (no treatment intervention) showed a significant decrease in MNTs pre-treatment to day 14 ($p<0.001$). There was a significant difference in mean MNTs between the control and all treatment groups ($p<0.05$) post treatment. Post treatment there were significant changes in mean MNTs day 7 and 14 for chiropractic and combined groups but for magnetic group only on day 14.

Group	Pre-Tx-> post-Tx	PostTx-> day 7	Post-Tx–> day14
Control	P>0.05	**P<0.001**	**P<0.001**
Chiropractic	**P<0.001**	**P<0.01**	**P<0.001**
Magnetic	**P<0.001**	P>0.05	**P<0.001**
Combined	**P<0.001**	**P<0.001**	**P<0.001**

Table 1: Statistical change in MNTs over time periods

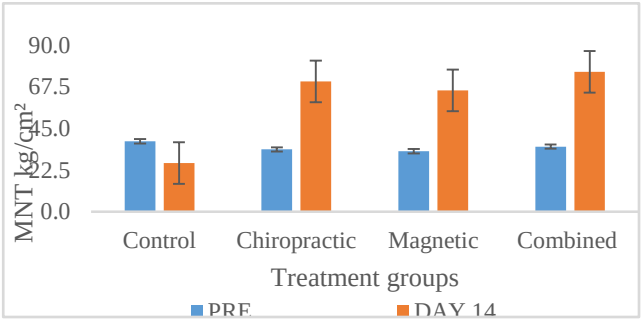

Figure 1. Bar chart comparing group mean MNTs before treatment to day 14.

Discussions and Conclusions: This study provides positive evidence that chiropractic, magnetic and a combined (chiropractic/magnetic) treatment show a statistically significant reduction in sensitivity to pain (indicated by increased MNTs) across measurement sites along the equine back musculature compared with no intervention (control group) for up to 14 days. Further investigation is required on differences in muscle tonicity effects and performance parameters.

References: De Heus, P., Van Oossanen, G., Van Dierendonck, M. and Back, W. (2010). A pressure algometer is a useful tool to objectively monitor the effect of diagnostic palpation by a physiotherapist in Warmblood horses**.** Journal of equine veterinary science, 30(6), pp. 310--321

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