

A preliminary investigation into the effect of rider weight and pony age on the mechanical nociceptive thresholds (MNTs) of the epaxial muscles and heart rate variability (HRV) of Exmoor ponies

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1. Introduction

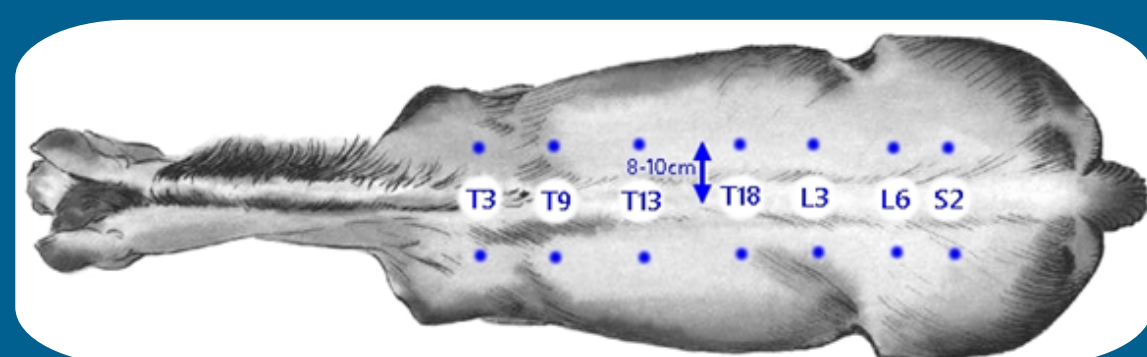
Welfare and ethics surrounding riding is critical to equestrianism's Social Licence to Operate. Rider weight limits form the basis for much concern from potential physiological changes induced by heavier riders.

2. Objectives

This crossover study investigated the impact of rider weight and pony age on epaxial muscle sensitivity to pain and HRV as a physiological stress factor.

3. Methods

- Ten trekking Exmoor ponies - 18 ± 4 (13–25) years, body-weight (BW) 345.1 ± 25.9 (318–402) kg.
- Three riders (inc equipment) - lightweight (LW; 9.7–12.7% BW), middleweight (MW; 13.9–17.6% BW) and heavyweight (HW; 18.7–23.1% BW).
- 4.28 km trekking route at walk & trot, once per day for three consecutive days with each of the above riders (random allocation).
- Triplicate MNTs (per diagram) & HRV measured before, immediately after & two hours following the ride.



Location of triplicate MNTs

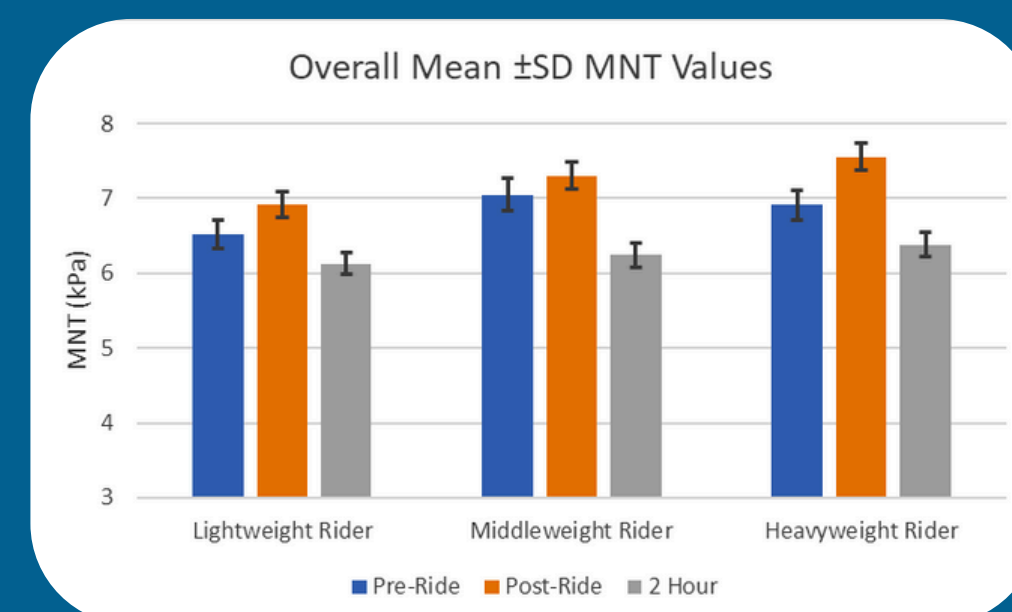
- Datasets analysed by ANOVA/T-test, Kruskal-Wallis/Wilcoxon.

4. Results

OVERALL EFFECTS

Immediately post ride: mean MNTs significantly increase for LW ($p < 0.01$) and HW ($p < 0.001$) riders; notable at T4 ($p < 0.05$)/T9 ($p < 0.01$) locations.

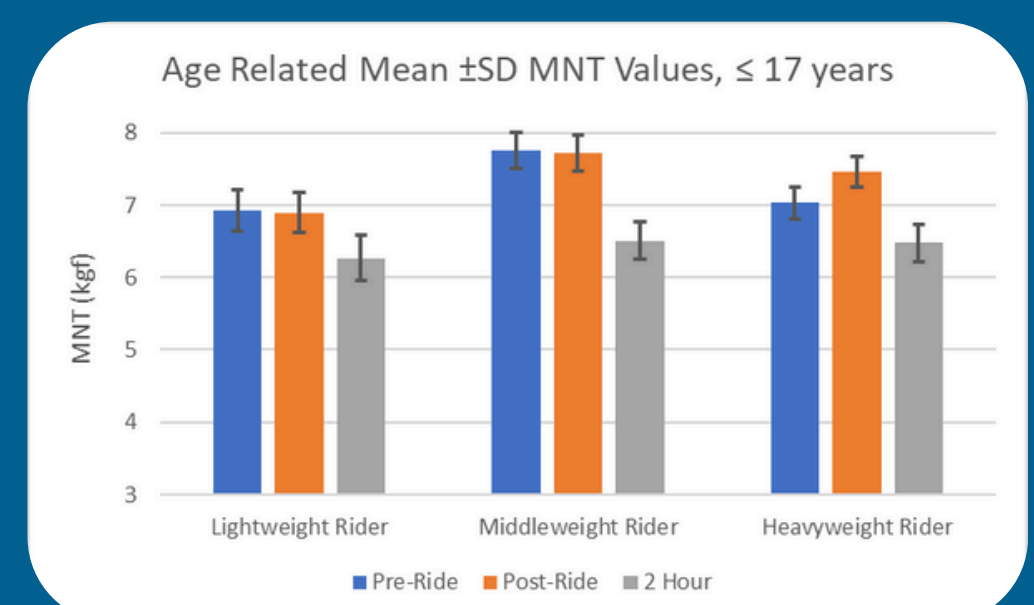
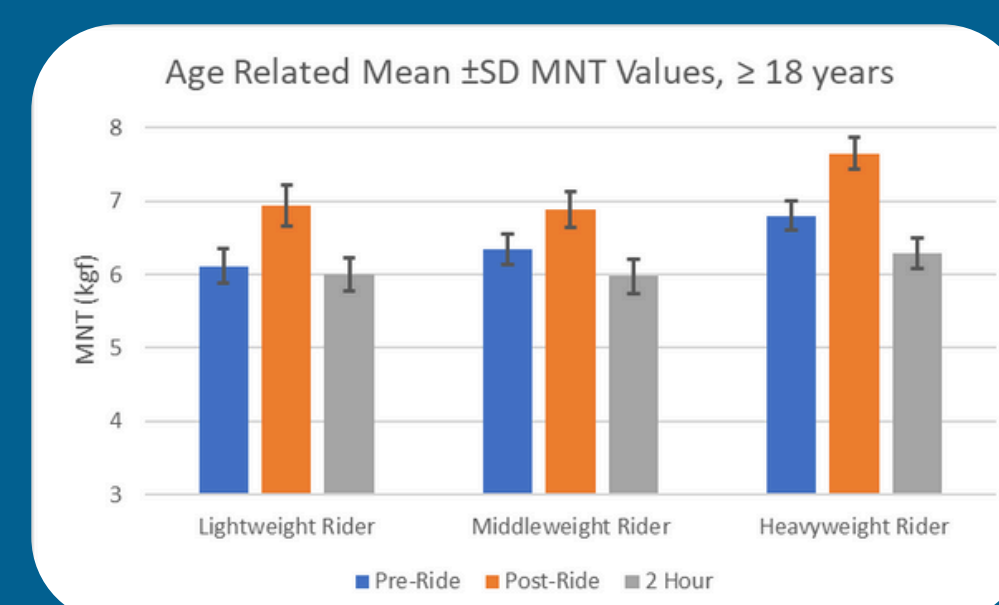
After two hour rest period: mean MNTs significantly decrease for all rider-weights compared to pre-ride LW ($p < 0.05$) and MW/HW ($p < 0.001$), notable at T13/L3(LW), T13–S2(MW).



PONY AGE EFFECTS

Immediately post ride: Ponies ≥ 18 years ($n=5$) MNTs significantly increase for all rider weights MW ($p < 0.05$), LW/HW ($p < 0.001$). Ponies ≤ 17 years ($n=5$), MNTs significantly increase for HW ($p < 0.01$) rider only.

After two hour rest period: Ponies ≥ 18 years MNTs significant decrease for MW/HW riders ($p < 0.05$). Ponies ≤ 17 years MNTs significantly decrease for all rider-weights LW/MW ($p = 0.001$); HW ($p < 0.05$).



HEART RATE VARIABILITY

Two hours post-ride, rider weight and pony age had no significant effect on HRV ($p > 0.05$).

5. Conclusions

- Within 2 hours of a trek, epaxial muscle sensitivity to pain increased for all rider weights, particularly the mid-thoracic/lumborum area. Age of pony also affected rider-weight effects.
- Physiological signs of stress were not apparent.
- Further research is warranted with larger cohort/breed types and longevity of effects.
- Understanding rider-weight effects on epaxial muscles of ponies and any age related effects is important for welfare standards.

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