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THE EFFECTS OF PARTIAL STABLE CONFINEMENT ON THE VOLUNTARY ACTIVITY OF WEANLING THOROUGHBRED FOALS

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Abstract

This thesis discusses an observational study, which evaluates the effects of partial stable confinement on the voluntary activity of weanling Thoroughbreds kept at pasture. Despite the current knowledge identifying the need for early exercise and pasture access in young Thoroughbreds, there is little information on pasture activity, and none on the effects of partial stable confinement on the amount of, and type of, activity when at pasture. It has previously been stated that young horses confined to a stable at night, spend more time cantering and trotting in the paddock during the day, when compared to their unconfined counterparts- the authors suggested this may be compensation for the lack of activity carried out whilst in confinement. Unfortunately, no further research has been carried out to support this theory, and it is therefore unknown how much confinement is required before horses will carry out compensatory activity, and how length of confinement and the subsequent volume of compensatory activity may affect total average daily activity.

A study was carried out on a small commercial Thoroughbred stud farm in the Manawatu, to determine the effects of partial stable confinement on the amount, and type of activity six weanling Thoroughbreds carried out on a daily basis. The horse's remained under normal management conditions, and were kept at pasture, and confined in loose boxes for an average of three hours a day, on mornings decided by the Stud Master, for handling and yearling sales preparation. Activity was monitored for 141 days using a Heyrex biosensor. The sensor containing a tri-axial accelerometer was attached to each horse's halter, and the data were recorded as Delta-G; the change in acceleration between respective samples. The data were recorded in 15 minute increments, resulting in approximately 576 records per day and possible 13,536 data points per horse (there was a range of 3,456 - 10,272 usable data points per horse). A total of 39,372 15-minute data points were used in the data analysis.

Each horse's activity profile, including total daily activity, average daily activity and proportion of high- and low-energy activity, when at pasture and during confinement was analysed. Total average daily activity varied between horses (70,385 – 95,331, $P < 0.001$), however each horse's total daily activity was highly repeatable across days with no significant difference between horses between days. Partial confinement resulted in a reduction in average daily activity in all horses (67,682 – 84,737, $P < 0.0088$), except Colt 3 who was more active during days of confinement, than on days of no confinement (89903 ± 5073 and 84813 ± 2163 , respectively).

Partial stable confinement had no significant effect on the proportion of total activity which was high-energy activity (8.69% on days of confinement, vs 12.23% on days of no confinement) except for Colt

3, who carried out a high proportion of high-energy activity during a day of confinement, then on a day of no confinement (18.23% vs 9.14% respectively). This may be a form of compensation, however it was only noted in one horse, and therefore is more likely to be a behavioural response to being isolated to a stable. The proportion of high-energy activity between the hours of 9am-12pm, when confinement would occur, was also not effected by confinement when compared to days of no confinement (8.64% vs 9.80%, respectively), except in Colt 2, who carried out no high-energy activity whilst in confinement between 9am-12pm.

The partial confinement of these weanlings appeared to reduce their overall average daily activity, however it did not affect the amount of high-energy activity. Thus partial confinement may not restrict the all-important osteo-inductive high speed activity required to promote optimal musculoskeletal development in weanlings. However, we lacked the experimental design to examine if there was any association of length of confinement and any compensatory activity. Further studies should examine if the length of partial confinement alters the subsequent activity at pasture.

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Table of Contents

| | |
|--|-------------|
| ABSTRACT | I |
| ACKNOWLEDGEMENTS..... | III |
| LIST OF FIGURES | VI |
| LIST OF TABLES | VIII |
| INTRODUCTION | 1 |
| CHAPTER 1: LITERATURE REVIEW..... | 2 |
| 1.2. NEW ZEALAND RACING INDUSTRY | 3 |
| 1.2.1. NEW ZEALAND THOROUGHBRED RACING INDUSTRY | 3 |
| 1.2.2. NEW ZEALAND THOROUGHBRED BREEDING INDUSTRY..... | 4 |
| 1.3. THOROUGHBRED MANAGEMENT..... | 6 |
| 1.3.1. WEANING AND WEANLING MANAGEMENT | 6 |
| <i>Weaning methods.....</i> | <i>6</i> |
| <i>Physical health at weaning</i> | <i>9</i> |
| 1.3.2. YEARLING SALES AND PREPARATION | 10 |
| <i>Yearling sales</i> | <i>10</i> |
| <i>Yearling Preparation</i> | <i>11</i> |
| 1.3.3. PRE TRAINING AND 2YO+ RACING | 12 |
| <i>2-year-old+ racing.....</i> | <i>13</i> |
| 1.3.4. WASTAGE..... | 14 |
| 1.4. NORMAL GROWTH OF THE JUVENILE THOROUGHBRED..... | 15 |
| 1.4.1. GROWTH IN RELATION TO MUSCULOSKELETAL DEVELOPMENT | 16 |
| 1.4.2. NORMAL GROWTH IN THOROUGHBRED FOALS..... | 16 |
| <i>Body weight and ADG</i> | <i>17</i> |
| 1.4.3. FACTORS AFFECTING FOAL GROWTH..... | 19 |
| <i>Geographical effects</i> | <i>19</i> |
| <i>Time of Foaling.....</i> | <i>21</i> |

| | |
|--|-----------|
| 1.4.4. MUSCULOSKELETAL HEALTH IN THE GROWING HORSE | 21 |
| 1.4.5. FACTORS AFFECTING SKELETAL HEALTH EARLY IN LIFE | 22 |
| <i>Rate of growth</i> | 22 |
| <i>Diet</i> | 23 |
| 1.5. PHYSICAL ACTIVITY OF THE HORSE | 24 |
| 1.5.1. THE IMPORTANCE OF PHYSICAL ACTIVITY..... | 24 |
| 1.5.2. HORSE ACTIVITY PATTERNS | 25 |
| <i>Feral Horses</i> | 25 |
| <i>Domestic Horses</i> | 27 |
| 1.5.3. QUANTIFYING ACTIVITY..... | 29 |
| <i>Time Budgets</i> | 29 |
| <i>Electronic Monitoring</i> | 29 |
| 2.0. OBJECTIVES..... | 32 |
| HYPOTHESIS | 32 |
| 2.1. METHODS AND MATERIALS | 32 |
| <i>Animals</i> | 32 |
| <i>Management</i> | 32 |
| <i>Monitors</i> | 33 |
| <i>Data Collection</i> | 34 |
| <i>Data</i> | 36 |
| <i>Statistical Analysis</i> | 37 |
| 2.2. RESULTS..... | 38 |
| 2.3. DISCUSSION..... | 46 |
| 2.3.1. HEYREX BIOSENSOR TECHNOLOGY | 46 |
| <i>Data Collection</i> | 46 |
| <i>Attachment</i> | 46 |
| 2.3.2. TOTAL DAILY ACTIVITY..... | 47 |
| 2.3.3. LEVEL OF ACTIVITY..... | 47 |
| CONCLUSION..... | 49 |
| REFERENCES | 50 |

List of Figures

- Figure 1:** Mean ADG (kg/d) of pasture-raised Thoroughbred colts (♂) and fillies (♀). Adapted from Brown-Douglas (2003) **17**
- Figure 2:** Average daily gain (kg/d) of Thoroughbreds reared in Australia, England, India, America and New Zealand. Adapted from: (Brown-Douglas and Pagan, 2016) **20**
- Figure 3:** Scatter graph of average distances moved by groups of domestic horses against yard/paddock area and logarithmic line of best fit for average distance moved by group as a function of yard/paddock area. Retrieved from Hampson et al., (2010b). **27**
- Figure 4:** Acrophases of total activity rhythms during each seasonal equinox throughout the year. The black and white blocks indicate light/dark phases. Dotted line represents time of supplement feeding. Adapted from: Bertolucci et al. (2008) **28**
- Figure 5:** Examples of electronic monitoring. A). A domestic adult horse wearing a VHF/GPS collar B). A foal wearing a harness used to carry GPS equipment. Images adapted from Collins et al. (2014) and Kurvers et al. (2006), respectively..... **30**
- Figure 6:** Heyrex monitors used on weanlings head collars..... **33**
- Figure 7:** Data collection overview, showing the successfulness of data recording and stabling routine of each horse each day of the trial. The top green, red and yellow section shows days of successful (green), successful but unusable (yellow), and unsuccessful (red) data collection. The lower pink and green section shows which days each horse was unconfined (pink) or partially confined (green)..... **35**
- Figure 8:** The average daily activity of each horse, each day of the trial. Blue is unconfined days, orange is days of partial stable confinement **38**
- Figure 9:** Total activity of each horse monitored on days with partial confinement..... **39**
- Figure 10:** Comparison of total averages of each horse for partially stable-confined, unconfined, and total daily activity. Blue bars are total daily activity, orange is total activity on partially confined days, and grey is total activity on days of no confinement..... **40**
- Figure 11:** The total number of counts of 'High' and 'Low' energy activity per horse during stable confinement days, and unconfined days. Red sections are unconfined, high activity, blue is low. Purple sections are stable-confined High energy activity, orange is Low energy activity..... **42**

Figure 12: The proportions of count of 'high' and 'low' energy activity during stable confined and unconfined days. Red sections are high activity, blue is low. **43**

Figure 13: The number of counts of 'high' and 'low' energy activity for each horse on confined, and unconfined days, between 9am-12pm. Red sections are unconfined, high activity, blue is low. Purple sections are stable-confined high activity, orange is low **44**

Figure 14: The proportions of 'high' and 'low' activity counts for each horse during the period of time which boxing occurred each day, between 9am-12pm. **45**

List of Tables

| | |
|--|-----------|
| Table 1: Comparison of body weight (Kg) data from three Northern-hemisphere growth studies, and one southern hemisphere growth study. Note: Hintz data collected on days 32, 62, 187 and 352, Pagan Data collected on days 183 and 350..... | 18 |
| Table 2: Overview of all used data from the data collection, showing the number of useable days, unusable days, and the number of stable confined days | 35 |
| Table 3: Summary of usable data, sectioned into ‘High’ and ‘Low’ energy activity counts for each data point | 36 |
| Table 4: Mean \pm SEM of the average total daily Delta-G for each horse overall, on boxed days, and unboxed days. | 41 |
| Table 5: Mean \pm SEM of the number of counts of ‘high’ and ‘low’ energy activity in stable confinement, and the paddock, for each horse. | 41 |

List of Abbreviation

| | |
|------|-----------------------------------|
| ADG | Average daily gain |
| DMD | Dorsal Metacarpal Disease |
| DOD | Developmental Orthopaedic Disease |
| GAG | Glycosaminoglycan |
| GDP | Gross Domestic Product |
| MSI | Musculoskeletal injuries |
| NZRB | New Zealand Racing Board |
| OC | Osteochondritis |
| OCD | Osteochondritis Dissecans |
| VHF | Very High Frequency Radio |