The Effects of Partial Stable Confinement on the Voluntary Activity of Weanling Thoroughbred Foals

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Vanessa Maree Lilly

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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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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