

28

Feeding and management practices amongst Australian horse owners

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Nutrition plays a critical role in equine health and welfare, and inappropriate feeding has been linked to numerous health problems in horses. This survey aimed to investigate current equine feeding and management practices across Australia. An online survey explored owner and equine demographics, current management, workload and feeding practices. A total of 4573 responses were obtained providing data on 5646 horses. Though 89% (n=4148) of horses had daily pasture access of ≥ 6 hours, 90% (n=4628) of horses received supplementary feeding. It is likely that many owners were feeding their horses due to poor pasture management, with 59% (n=2858) of pastures overgrazed. Nutritional analysis of rations (n=2892) using the NRC formulas found 25% of horses were fed excess dietary energy, while 47% received excess crude protein, 66% excess calcium, 53% excess phosphorous, 57% excess sodium, 37% excess chloride, 78% excess magnesium and 88% excess potassium. Furthermore, it is likely that these figures would be higher if the nutritional composition of the pasture were included in the analysis. Moreover 65% of owners classed their horses in a body condition score (BCS) as 'good' based on Huntington's 0–5 scale. However, this may not be accurate as previous studies have found owners frequently underestimate their horses BCS. This study suggests that mismanagement of horse pastures is prevalent in Australia, hence the overreliance on supplements. Horse owners would benefit from assistance with day-to-day pasture management, understanding how to maintain a healthy horse BCS and formulate appropriate rations for their horses to reduce excessive supplementary feeding.

Keywords: equine; nutrition; management; online survey; social media; disease

29

A preliminary investigation comparing the frequency of grazing and movement behavior between a track paddock system and a conventional paddock system

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Track grazing systems are anecdotally suggested to promote behavior similar to free-living horses and enable turnout without risking laminitis, although research suggests an increase in occurrence of agonistic behavior. The aim of the study was to compare behaviors observed on the Track system with those displayed in conventional paddock turnout. Five ponies (age range 10 to 28 years, mixed breed/sex) within an established social group and accustomed to both track and conventional paddock grazing were observed; on the Track system (phase 1), immediately after moving to the conventional paddock (phase 2), and following a week in the conventional paddock (phase 3). Frequency of individual grazing/ peer grazing/ movement towards or away from peers/ movement towards or away from feeding opportunities were recorded using scan sampling. Data were analysed using Wilcoxon Signed Rank ($P < 0.05$) via IBM SPSS²³. Peer grazing occurred significantly more frequently ($Z = -4.22$, $P < 0.0001$) in phase 1 compared to phase 3. Pony movement towards feeding opportunities (hay nets) was significantly more frequent ($Z = -4.12$, $P < 0.0001$) in phase 1 compared to phase 3. Movement was overall more frequent in phase 1 compared to

phase 3 ($Z = -4.34$, $P < 0.001$). Significant differences were also observed against phase 2, highlighting the importance of an acclimatisation period. The Track system appeared to promote close proximity grazing, likely due to limited foraging opportunities but also mimicking the collective behavior of feral horses moving between foraging sites. The track system appears to promote positive equine welfare in established groups, providing opportunities to consummate innately motivated foraging behaviors.

Keywords: track; paddock; grazing; horse; welfare

30

The effect of trot pole exercise on rectus abdominus activity in the horse

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Trot pole exercises are used as a tool to improve equine performance or as a component of rehabilitation regimes, and are thought to activate the horse's core musculature including *rectus abdominus* (RA) to retain stability. Six horses of variable age (13 ± 4 years) and height (1.6 ± 0.1 m), confirmed sound by their owners and experienced in undertaking trot pole exercises were fitted with Delsys Trigno™ standard surface electromyography electrodes on the RA 6cm bilaterally to the umbilicus. Horses completed a warm-up, then were videoed being ridden through 15m: no poles (NP) followed by two trot pole exercises of 8 poles (3m length, spaced: 1.35m), with poles on the ground (GP) and with raised poles (RP) (0.2m). Mean and maximum RA contractions were normalised to the maximum dynamic contraction from NP using integrated EMG. Friedman's analyses with post-hoc Wilcoxon signed-rank tests (Bonferroni adjusted: $P < 0.02$) identified if differences in RA workload occurred for the cohort and individuals. Mean (MeW) and maximal (MaW) workload did not differ for the cohort between the three conditions ($P > 0.05$). Significant increases in MaW occurred for three horses; H2 and H4: NP to GP ($P < 0.001$; $z = 3.18$, d.f.=9), NP to RP ($P < 0.001$; $z = 3.21$, d.f.=9) and GP to RP ($P < 0.001$; $z = 3.18$, d.f.=9), H5: NP to GP ($P < 0.05$; $z = 2.44$, d.f.=9) and NP to RP ($P < 0.001$; $z = 2.94$, d.f.=9). However H6 recorded a significant decrease in workload between GP to RP ($P < 0.05$; $z = 2.42$, d.f.=9). The results suggest trot pole exercises can increase RA activity compared to working on the flat in some horses.

Keywords: electromyography; pole; exercise; equine; training; rehabilitation

31

The effect of the Pessoa™ training aid on equine rectus abdominus workload on a treadmill

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Equestrian trainers use the Pessoa training aid (PTA) to improve strength in horses with muscular hypotrophy present because of underlying pathology and a lack of training. Kinematic analysis has found the aid shifts weight-bearing from the forelimb to the hindlimb, producing spinal flexion which should activate the horse's core musculature, including *rectus abdominus* (RA). This study investigated if differences occurred in equine RA workload with the PTA at the low and middle positions compared to no PTA. Seven horses accustomed to working in the PTA and on a treadmill (HST) participated in the study. Delsys Trigno™ electromyography electrodes were attached 6cm lateral to horses' umbilicus. Horses completed a 3 minute warm-up in walk then completed three randomised trials (3 minutes duration) in walk (1.45m/s) and trot (3m/s): 1) No PTA, 2) Low PTA and 3) Middle PTA. Mean and