IMPLICATIONS OF EARLY-LIFE MANAGEMENT PRACTICES FOR SUBSEQUENT BEHAVIOUR AND WELFARE OF FOALS

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Introduction

Persistent fearfulness in domestic horses has the potential to jeopardise health and welfare (Heird *et al*., 1986). Fearful responses to threatening stimuli cause considerable distress and increase risk of injuries, punishment and mistreatment (Spier *et al*., 2004; Søndergaard and Halekoh, 2003). Consequently, increasing a foal's manageability (defined by Lansade *et al*., 2004, as the ease with which a routine procedure can be imposed) may significantly enhance its welfare. Early-life management practices, including diet, human contact and handling, can be manipulated to reduce fearfulness and produce more manageable foals.

Discussion

Early experiences strongly influence adult behaviour (Lansade *et al*., 2004), and repeated exposure to threatening stimuli overcomes horses' adverse responses to these stimuli (Jeziersky *et al*., 1998). Lansade *et al*. (2005) examined the effects of neonatal handling on foals' reactivity and manageability. Thirteen foals were handled daily until 14 days of age. Handling involved haltering, patting and leading foals, picking up their feet and shaking a plastic bag near them. Thirteen control foals received minimal human contact. Behavioural tests were performed by unfamiliar personnel at 16 days, three months, six months and one year of age. Handling tests comprised recording time taken to halter and pick up feet, defensive reactions and walk ratio (time foals spent walking under constraint divided by total time spent leading). Surprise tests involved recording flight distances when foals were presented with a stimulus known to handled foals (shaken plastic bag) and unknown stimuli (saddlecloth and surcingle placed on foals' backs, powder sprayed on foals' shoulders).

Neonatal handling had only temporary effects on manageability of foals. At 16 days of age, handled foals were significantly easier to handle than control foals for all four parameters measured. At three months of age, walk ratio and time required to halter were significantly lower in handled foals. At six months of age, only walk ratio was significantly lower in handled foals. At one year of age, there was no difference between groups. Handled foals were less reactive than control foals in surprise tests with a known stimulus just after the handling period, but not later. Unknown surprise tests revealed no significant differences between groups, indicating that neonatal handling had not reduced general fearfulness. These findings suggest that neonatal handling alone does not produce manageable foals.

Knowing that dams constitute a major social model facilitating foals' acquisition of knowledge, Henry *et al*. (2005) investigated the influence of positive human-mare relationships on foals' behaviour toward humans. Twenty control mare-foal dyads received minimal human contact while, in their foals' presence, 21 treatment mares were brushed and hand-fed daily for five days post-partum. Mare protectiveness was evaluated based on locomotion patterns and foal-directed behaviours. Reactions and flight distances were recorded during exposure of foals to a motionless person at 15 days and at one month of age, approach tests at 15 days of age, saddlepad tolerance tests at one month of age, and approach-stroking tests at approximately one year of age. Generalisation of 'tameness' was assessed during approach-stroking tests by an unfamiliar person two months later.

Dams' maternal behaviour, and their responses to people seemed to influence their foals' reactivity. Dams facilitated foals' interaction with non-threatening people, but delayed interaction with people who initiated or forced contact with their foals. Treatment foals seemed more manageable than control foals as they initiated and accepted more physical contact with the experimenter, spent longer closer to the experimenter and accepted saddlepads on their backs more quickly. Control foals were more fearful, and frequently sought the reassurance of maternal

contact. Treatment foals of protective mares remained further from the experimenter, closer to their dams and were less approachable than foals of calm mares. These effects persisted until foals were one year old, and became generalised from experimenter to unfamiliar people, who could approach and stroke treatment foals rapidly. These findings suggest that handling mares in their foals' presence is more effective than neonatal handling at producing manageable foals.

It is traditionally accepted that diet influences horses' behaviour. To quantify this, Nicol *et al*. (2005) compared behaviour of foals fed a starch and sugar based diet (SS foals) and those fed an isoenergetic fat and fibre based diet (FF foals) from one month of age. Seventeen foals were randomly allocated to a weaning method (foals left in their paddock or removed to a barn), counter-balanced across feeding treatments. Foals were observed immediately after weaning and during temperament and tractability tests two months later. In both novel object (umbrella) and novel person tests, time foals spent walking toward or away from, interest in, and latency to approach or touch the object/person were recorded. In handling tests, foals were led toward a novel bridge or groundsheet and time spent resisting the handler, walking toward or away from, interest in, latency to touch and time taken to cross the bridge/groundsheet were recorded.

FF foals appeared more settled and less distressed than their SS counterparts during weaning as they cantered less frequently and for shorter duration; barn-weaned FF foals walked less; and paddock-weaned FF foals grazed more. FF foals seemed calmer and more inquisitive than SS foals during temperament tests as they were more willing to approach and investigate the novel object, were less likely to walk away from the novel person (suggesting reduced flightiness), and were significantly quicker to cross the novel bridge/groundsheet (more willing to perform). These findings suggest that a fat and fibre based diet produces foals that are more settled during times of stress or challenge.

Conclusion

To decrease likelihood of injuries, mistreatment, and chronic stress later in life, it is important to rear manageable foals. Although these studies were limited by their small sample sizes, they have important implications for the ways in which welfare of foals can be improved with early-life management practices. The findings of these studies suggest that, as neonatal handling has only temporary effects, handling of mares in their foals' presence is more effective at producing less fearful, more manageable foals. Incorporation of a fat and fibre based diet may potentiate these effects.

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