

# Welfare considerations for management of horses on prolonged periods of box rest

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## Abstract

\*\* Other clinical commentaries don't have an abstract, so I have assumed one is not expected?

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## Introduction

Peeters *et al* describe the presentation, diagnosis and successful management of an unusual fracture, of the femoral greater trochanter, in an eight-year-old Warmblood mare. Internal fixation was not considered feasible due to the high likelihood of implant failure at this location and financial constraints. However, based on successful outcomes with similar proximal limb bony protuberances, conservative management was undertaken with an excellent outcome – the horse returned to its previous level of exercise. The authors should be commended in this case report for considering the welfare implications of horses on prolonged box rest and reflecting on what further steps could have been taken to improve this mare's welfare. This clinical commentary will discuss the welfare implications of confinement in horses before expanding on further options for optimising the management of horses undergoing box rest.

## Welfare

The term welfare is often associated with negative connotations, at least in part, this may be due to historical teaching of the subject revolving around the five freedoms (Brambell, 1965). The five freedoms focused on the absence of negative's to ensure animals have a life worth living. As welfare science has evolved, we now strive to provide animals not just with a life worth living but with a good life (Mellor, 2016) and we now recognise that welfare represents how that individual animal feels, i.e. their mental state, which is dependent on the balance of negative to positive experiences. This balance can be measured using the five domains model, which has evolved over nearly 30 years and now specifically includes intra-species interactions in addition to inter-species ones (Mellor *et al.*, 2020).

When considering the welfare of a horse on box rest we should therefore consider the experience from that individual horses perspective. To do this we use the horse's behaviour as a proxy for their mental state, and some behavioural indicators of stress were suggested by the authors. However, previous work has shown poor agreement on the perceived level of stress a horse is experiencing amongst equine veterinarians (Pearson *et al.*,

2021). Evaluating stress is challenging as individuals across all species employ different coping mechanisms (Koolhaas et al., 1999; Budzyńska, 2012; Vindas et al., 2017). It is easy to recognise the horse that employs a pro-active coping mechanism, it may be doing the wall of death round the box or frequently vocalising. But we should not forget that horses may also utilise a reactive coping mechanism (Budzyńska 2012). Reactive coping often results in the horse appearing content in the situation, despite mounting a similar physiological stress response to those clearly not coping (Yarnell et al., 2013). Mice kept in a cage environment that meets minimum legal standards spend more time inactive but awake compared to those in an enriched environment, yet visibly they appear content. However, either moving them to enriched cages or providing anti-depressants significantly reduces time spent inactive but awake (Fureix et al., 2022). When you consider the depth and breadth of research demonstrating the negative welfare implications of keeping horses stabled, as reviewed by Krueger et al. (2021), we should always remain mindful that this is inevitably stressful, even in horses that appear outwardly to be coping. As demonstrated by Fureix et al. (2022) providing an enriched environment improves welfare. The term environmental enrichment is appealing and suggests we are creating a positive experience for the animal. But perhaps it would be better described as reduced impoverishment - as at best we are returning them to a life worth living, not a good life (Langford, 2023).

### **Don't forget about human behaviour change**

There is no magic bullet for successfully managing horses on box rest. Instead, treatment should be individually tailored to that horse-owner combination. Try to encompass a suit of interventions that the owner will find easy to implement by employing the COM-B model (Michie et al., 2011), for a review of how this can be implanted in equestrianism see (Wolframm et al., 2023).

- Capability does the owner have psychological and physical capability (i.e. knowledge and physical skills) to implement each suggestion?
- Opportunity – is each suggestion something that is feasible in the physical environment? And will there be social support or social pressure that will impact on compliance? Suggesting the use of a small electrically fenced pen on a livery yard that does not allow electric tape will not only be unfeasible but may result in a demoralised owner.
- Motivation – Most human behaviours are habits and so strategies that fit in with an owner's normal routine will be easier to implement than those that require reflective processing, i.e. planning new behaviours.

Engaging owners in the management plan whilst understanding their Capability, Opportunity and Motivation to change their Behaviour (COM-B) regarding their horse's care will increase compliance.

### **Restoring the balance – minimising the negative and providing opportunities for positive experiences.**

The aim should be for the horse to return to full physical health whilst minimising the detrimental impact on their mental health and, just as importantly, keeping horse and owner safe during both confinement and restricted exercise. Possible considerations to achieve this include:

1. Companionship. In this scenario the authors ensured another horse was always visible and this is certainly better than being completely socially isolated. Nevertheless, physical contact is important to horses and stress can be offset by social buffering (Visser et al., 2008). The concept of a social box with full length vertical bars, allowing a horse to pass its head and neck through to the neighboring stable, has been shown to improve welfare when compared to visual and olfactory contact only (Gmel et al., 2022). Even in horses that spend 23 hours a day in a herd, when stabled for just one hour those with a half wall between stables used the opportunity to engage in physical contact, spent more time resting and less time stood vigilant compared to those with a full dividing wall (Borthwick et al., 2023). Altering the structure of stables is clearly unfeasible for most. A simpler solution may be tying the horse up to allow grooming over a stable door with a preferred companion, if it is safe to do so (see Figure 1). This could be undertaken whilst mucking out twice a day to improve equine well-being whilst easily fitting into the owner's routine. If physical contact with another horse is not possible then

encouraging the owner to spend time scratching their favorite areas (those where the horse twitches their upper lip or leans into the pressure) will still lower heart rate and promote relaxation (Feh and de Mazières, 1993). Additionally, horses will often stand resting next to a large stable mirror. If physical contact is limited this can be very effective way to promote resting behaviour and reduce stress (McAfee et al., 2002), especially if the horse would otherwise lose sight of other horses when it chooses to lay down. In our hospital horses maintained initially in a sling to manage a fracture are unable to see conspecifics, here the use of a manikin horse outside the stable door is highly beneficial.

2. Training. Learning new tasks and performing trained ones results in dopamine spikes (McBride et al., 2017) and so provides valuable mental stimulation. The authors already suggested physiotherapy exercise as a resource for maintaining physical strength and suppleness. Clayton (2016) provides examples of how to undertake these exercises and has shown their beneficial effects in horses returning to work after a period of box rest (Holcombe et al., 2019). Whilst commonly performed as carrot stretches, these exercises can also be trained using a target with clicker training. Altering the novelty and complexity of the tasks will keep the horses brain engaged, so mix up exercises that will help physical fitness with others the horse and owner find fun.
3. Further environmental enrichment. The authors correctly suggest common ideas for additional environmental enrichment such as a treat ball or hung vegetables. Enrichment is commonly considered the provision of choice and is designed to stimulate the senses (Hoy et al., 2010), therefore it should be noted that adding an object or food source only acts as a source of environmental enrichment if the horse chooses to engage with it (Bacon, 2018). Providing choice in sources of available fibre (haylage, grass blocks and chaff for example) as well as considering novel textures (lettuce vs swede vs chopped vegetables frozen in a fruit juice ice block) and tastes helps maximise the senses. Ideally, different ideas should be rotated to maintain novelty. As well as food some people suggest the use of different scents for the horse to investigate, safe branches to chew and a broom head screwed into the wall can provide an inviting scratching post. The Blue Cross (Court, 2024) and BHS (Harrison, 2024) provide excellent online resources for owners to consider.
4. Psychopharmaceuticals. These medications can positively impact the horse's mood and help them cope with the stress associated with confinement. It should first be remembered that Acepromazine has no anxiolytic properties, and in companion animal medicine is contraindicated where anxiety is a component (Pereira et al.). As a dopamine agonist Acepromazine will reduce the amount of movement you may observe in the horse, externally making them appear calmer, but without actually changing how they feel, i.e. not improving their welfare. Having said that, Acepromazine can be successfully combined with a drug that does act to reduce anxiety as anecdotally the effects appears to be synergistic. Fluoxetine, a selective serotonin reuptake inhibitor, has been used successfully to help horses cope with box rest (Fontenot et al., 2021). Fluoxetine is not one that we tend to use as it can take several weeks to see the beneficial effects, and it is often the initial period of confinement that can be problematic. Nonetheless, as this case was on box rest for nine months Fluoxetine may have been indicated. More commonly we would use Trazodone, which has also been documented as useful under these circumstances (Davis et al., 2018). Under more extreme circumstances or for cases that are really struggling, for example we had a horse with a non-displaced radial fracture in the sling that became increasingly aggressive to handle, we will also use Alprazolam. Normally, we would start with Trazodone, adding Acepromazine if needed and then Alprazolam as well for the most difficult cases. The apparent synergistic activity of this triple combination often allows a reduction of all three medications to very low levels. Alprazolam is an excellent anxiolytic but we should be mindful of the potential for ataxia at higher doses and, as a benzodiazepine, the potential for addiction and so we advise reducing the dose slowly if use exceeds several weeks. Fundamentally, I believe these medications can be a game changer if used appropriately in horses subject to the stressors of box rest.
5. Reintroduction of exercise. How and when increased movement is allowed will be very dependent on the individual circumstances of the case. Here Peetres *et al* reflected, in hind sight, in-hand walking could have been started earlier to stimulate remodeling at the fracture sight. Most equestrians will be familiar with the perils of turning horses out after a period of confinement and/or hand walking a horse on

restricted exercise, where the motivation to run, rear and buck can overshadow the handler's cues. This occurs due to post-inhibitory rebound, a process where a behaviour is performed to excess following a period of restriction (Chaya et al., 2006). This is another scenario where psychopharmaceuticals are helpful for both horse and human safety. Furthermore, introducing restricted paddock exercise earlier, if possible, reduces the build-up of frustration and thus minimises post-inhibitory rebound (Chaya et al., 2006; Freire et al., 2009). Grazing is one of the best activities to promote relaxation and reduce stress in horses (Stomp et al., 2018; Ruet et al., 2020). Use of several small (stable-sized) pens that are linked by gaps on alternating sides (Figure 2) is an excellent way of allowing horses to quietly graze and wander without being able to get into trot. In cases where a gradual exercise programme is not feasible, especially where there are concerns for horse or human safety, multiple connecting larger pens can be used. These allow a horse to achieve a steady trot before having to slow to get through a narrow passage into the next pen (Figure 3). Gradually making them bigger allows increased, but still relatively controlled, free exercise. For the slightly larger pens a sensible companion horse can usually be added, again helping improve welfare and reducing the risk of jumping out. Use of pens will not be appropriate for every scenario but where feasible introducing the horse into them early, even starting for just a few hours a day can have a positive impact on wellbeing and facilitate safer hand walking.

## Conclusion

Box rest is inevitably stressful for the horse and usually also the owner, yet we often underestimate both. Careful consideration should be given to how we can improve the horse's welfare under these challenging conditions. Involving the owner in decision making, discussing a range of potential options and the feasibility of each option in their individual circumstances maximises the likelihood of success.

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