Original Research

# Investigations Into Equine Transport-Related Problem Behaviors: Survey Results

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## ARTICLE INFO

## ABSTRACT

Transport-related problem behaviors (TRPBs) in horses are an animal welfare concern, and many training methods in loading/travelling have been recommended to reduce their incidence. This study aimed to investigate the incidence of TRPB and training methods in Australia and to identify risks for and consequences of TRPB. An online survey was conducted, and respondents reported whether and how they trained horses for loading and/or travelling. They were also asked whether their horses suffered from transport-related problem behaviors or injuries, the industry sector in which they participated and details of the vehicle used for transport. TRPB were classified into preloading, loading, travelling (TPB), and unloading. Training methods were classified into operant conditioning (OC), self-loading (SL), habituation (H), and no training (NT). TRPB were reported by 38.0% of respondents, mainly at loading and travelling. Although 43.5% of respondents did not train their horses, OC, H, and SL were applied by 25.5%, 20.2%, and 10.8%, respectively. In 98% of cases, OC was applied by negative reinforcement/positive punishment. Training method was identified as a risk factor for all types of TRPB: their odds were higher in horses trained by OC and NT compared to SL and H. Racing horses were at high risk of TPB ($P < .001$). Two-horse straight float was associated with a higher risk of preloading ($P = .018$) and loading problem behaviors ($P = .007$) and injuries ($P = .022$). While loading and travelling problems were a risk factor for transport-related injuries, H and SL reduced this risk. These training approaches are recommended to safeguard horse welfare during transport.

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## 1. Introduction

Transport stress results from a mosaic of stressors which affect the horse's affective and physiological states, leading to behavioral and health problems before, during, and/or after trips [1]. The transportation process includes the following stages: preloading handling, loading, transport, unloading, and adaptation to a new environment [2]. Each of these stages can present adaptive challenges to the horse, and each is characterized by different stressors which may result in different problem behaviors [3].

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Preloading handling can result in behavioral anxiety due to enforced separation from familiar physical and social environments. Through associative learning, horses may recognize the pretransport routine (e.g., handling, grooming, fitting of protective tack, and the noise of the transport vehicle) and associate it with past travel experiences [1]. Consequently, animals which have experienced problematic travel in the past, such as falls during transport, tend to exhibit increased behavioral problems during preloading [4]. Horses with preloading problem behavior may show signs of anxiety, such as vocalization, pawing, heightened locomotion, and shaking [2,5].

The loading process of leading the horse into an enclosed space which may be poorly lit, often up an unstable and noisy ramp, or a large step, is inherently aversive for most horses [6]. Loading horses onto transport vehicles is therefore associated with the most transport-related problem behaviors (TRPBs) [3,7]. Horses may display anxiety when approaching the vehicle or stepping onto the ramp, regardless of the level of experience [8]. Behaviors associated with anxiety that may expressed during loading include rearing, pulling back, head tossing, pawing, standing, bolting, and turning sideways [3,9]. Such behaviors may lead to injury to the horse and/or the handler [10,11].

Psychological stress during transportation can be due to confinement, isolation, and forced proximity to unfamiliar travelling companions, and they are exacerbated by the other physical stressors (noise, poor ventilation, and heat) typical of this transport phase [2]. During transport, horses may exhibit a variety of behaviors including pulling back, pawing, kicking out at the vehicle, and biting and kicking directed at travelling companions [3,7]. These behaviors can lead to injuries from impacts with vehicle components, such as kicking the vehicle walls or dividers or due to loss of balance which may result in a fall [10].

Unloading may be challenging if the ramp is too steep or is slippery or if the horse is lame or anxious about the environment into which it is being unloaded [2]. These problems may be exacerbated in vehicles which require horses to be unloaded backward, preventing them from seeing what is behind [12]. Some horses may freeze inside the vehicle and be difficult to coax from it, whereas others may perform flight responses such as leaping or backing out of the vehicle at speed [8]. Messori et al. [13] reported that when slaughter horses performed such behaviors, handlers intervened using positive punishment which resulted in injuries and poor horse welfare outcomes.

TRPBs have been associated with vehicle characteristics, such as the slope of the loading ramp, position of the horse inside the vehicle, the absence of dividers, and loading density in unstalled group transport [6,14]. However, minimum design standards for horse transport vehicles do not exist in Australia, and the ideal vehicle design in terms of minimizing transport stress and related problem behaviors is still a matter of debate [12].

A variety of training methods have been developed and proposed to reduce incidence and consequences of TRPB [6,15–18]. Most loading training methods rely on negative reinforcement (e.g., see [19–21]) and a variety of equipment has been used to assist with loading, including winches, whips, various bits and bridles, nose and lip chains, cattle prods, ropes around the hindquarters, and fatiguing lunging [15]. Poorly implemented negative reinforcement methods or methods relying on equipment which apply aversive pressure may induce anxiety of sufficient intensity that the horse is motivated to escape from the vicinity of the vehicle and/or handler, resulting in the reinforcement of a response which is the opposite of what is intended [22]. It has been theorized that successful escape from an intensely fear-inducing or aversive stimulus, such as a trailer, is highly reinforcing and may represent a form of "one-trial" learning [23,24]. In situations where the strength of the horse's escape response overpowers the capacities of the handler, the correct application of negative reinforcement to elicit the desired response can become very difficult, often resulting in increased difficulties loading the horse because it has been inadvertently reinforced for escape rather than approach responses [21].

Self-loading (loading on a verbal cue) using target training via positive reinforcement was used to successfully retrain horses which previously refuse to load [15]. Habituation occurs when there is decreased response to a stimulus as a result of the repeated presentation of that stimulus [25]. Houpt (1982) recommended training foals to load and exposing them to travel early in their lives. Early positive familiarization with the vehicle and travelling procedures will habituate the horses to these inherently aversive experiences. Habituation practices can include travelling foals with their dam or a familiar older horse, installing leading, backing, and parking responses before attempting to load the horse for the first time and travelling for short periods before attempting long journeys with naïve horses. Such practices should result in habituation to all aspects of the transport process reducing the likelihood that behavior problems will develop in these horses [7].

There are currently little empirical data on how commonly the many methods and equipment recommended by trainers and training schools are used, nor has the effectiveness of these methods been compared on a large scale. The aims of this study were (1) to investigate the perceptions of owners and connections regarding the incidence of TRPB, (2) to identify training methods commonly used to load and travel horses, and (3) to determine if TRPB were associated with factors such as training method, type of transport vehicle, equine industry sector, or transport-related injuries in Australia.

## 2. Material and Methods

This study was approved by the Human Research Ethics Committee of the University of Sydney (2015/308).

### 2.1. Study Design and Data Collection

A cross sectional online survey was conducted in Australia from June to September 2015. Details of the design and distribution of the cross sectional survey and the description of the demographic characteristic of the study population have been reported previously [26]. Briefly, the survey was digitized using SurveyMonkey (SurveyMonkey Inc., California, USA, www.surveymonkey.com). Participants in the racing, equestrian, and recreational equine industry sectors responsible for organizing