Journal of Equine Veterinary Science 33 (2013) 95-100

Journal of Equine Veterinary Science

journal homepage: www.j-evs.com

Original Research

Prevalence and Factors Associated with Abnormal Behaviors in Chilean Racehorses: A Direct Observational Study

Tamara Tadich MSc [a,b], Constanza Weber MV [b], Christine J. Nicol DPhil [c]

[a] Becario CONICYT, Programa Doctorado en Ciencias Veterinarias, Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Valdivia, Chile
[b] Instituto de Ciencia Animal, Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Valdivia, Chile
[c] Centre for Behavioural Biology, University of Bristol, Langford, Bristol, UK

ARTICLE INFO

Article history:
Received 7 March 2012
Received in revised form
13 May 2012
Accepted 23 May 2012
Available online 11 July 2012

Keywords:
Animal welfare
Equine
Stereotypic behavior
Thoroughbred
Husbandry

ABSTRACT

Stereotypies are considered a cause and symptom of impaired welfare, and have been associated with suboptimal husbandry systems. The aim of this study was to estimate the prevalence of stereotypic and other abnormal behaviors in Chilean thoroughbreds by direct observation, and examine their associations with biological characteristics and management practices. Seven hundred forty-three racehorses were observed directly, every 5 minutes during 1 hour before and after feeding, to identify behavioral disorders. A questionnaire was administered to handlers to obtain information about the animal and husbandry practices.

The total observed prevalence rate of horses with one or more abnormal behavior was 11.03%. The total observed prevalence rates of stereotypies and abnormal behaviors were 6.32% and 5.52%, respectively. Horses at racetrack B presented more abnormal behaviors than those at racetrack A ($P = .0092$), and specifically, the prevalence of the oral group was higher ($P = .0013$). Mares presented a higher percentage of stereotypies ($P = .0014$), and the use of wood shaving bedding was positively associated with abnormal oral behaviors ($P = .0027$). Visual contact with conspecifics was possible for 86% of horses; the remaining had no social contact. Their diet consisted of a mixture of 71% of oats and 29% of roughage in average, presented between one and three times daily. No significant associations were found between the presence of visual contact, number of daily rations, yard, and percentage of roughage delivered, and stereotypy presentation ($P > .05$). In 43% of the cases with stereotypy, horses were impeded from performing the behavior by physical methods, avoiding the real problem and acting as a risk for animal welfare.

1. Introduction

According to Mason [1], stereotypies are repetitive invariant behavior patterns with no obvious goal or function. Their development is associated with horses being managed in suboptimal environments, currently or in the past, under conditions that result in behavioral frustration, unavoidable stress, fear, or lack of stimulation [1,2]. Horses are social herd-living animals that have evolved to feed on highly fibrous material during the majority of the day [3,4]; most husbandry systems for high-performance thoroughbreds differ greatly from this. Two fundamental changes have occurred owing to domestication that can contribute to the development of stereotypies: (1) social structure is disrupted and (2) free access to forage is substituted by controlled rations, usually high in concentrates [5].

Stereotypic behavior can develop when an animal is unable to execute a behavioral pattern that it is highly motivated to perform, such as feeding behavior, or when it is unable to avoid a stressful or fearful situation [1]. In the

Corresponding author at: Tamara Tadich, MSc, Becario CONICYT, Programa Doctorado en Ciencias Veterinarias, Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Casilla 567, Valdivia, Chile.
E-mail address: tamaratadich@gmail.com (T. Tadich).

0737-0806/$ - see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jevs.2012.05.059

horse, the most described and studied stereotypies are crib-biting/wind sucking, weaving, and box walking [2,6-8], and although it is not considered as a stereotypy, wood chewing is also of interest because it may precede or be associated with crib-biting [2,7,9]. Studies conducted in the United Kingdom have reported prevalence rates of between 3.8% and 9.4% for crib-biting/wind sucking, 2.6% and 8.3% for weaving, and 1.2% and 5.5% for box walking [10,11], and recently, in the United States, Albright et al. [12] reported a prevalence rate of 4.5% for crib-biting among different breeds.

Numerous husbandry practices have been identified as risk factors for the development of these behaviors, including confinement, isolation from other horses, feeding practices, bedding material, and weaning method, among others [9,7,13-18]. The role of biological characteristics such as breed, sex, and sire has also been studied [12,19-21], and neurological explanations have also been proposed [22-24]. The development of stereotypic behavior is widely thought to be an indicator of impaired welfare, indicating that the horse has problems adapting to the environmental factors to which it is exposed [6,11,25]. However, the extent to which persistent or established stereotypies are an indicator of impaired welfare is much less certain [26].

Thoroughbreds are three times more likely to develop stereotypies than other breeds [12,21]. This may reflect a genetic susceptibility, a response to intensive management, or a combination of both. The horse-racing industry is growing in Chile, but there are no policies in relation to the housing and management of these horses, which is important taking into account that, unlike in many other countries, racehorses in Chile spend their entire competitive life housed at the racetrack yards. Establishing the prevalence of stereotyped and other abnormal behaviors in this population of thoroughbreds could provide important information about the extent to which their housing and management is ensuring their welfare. Most information currently available on the prevalence and risk factors of equine stereotypies derives from questionnaire-based cross-sectional studies. There can be problems with the accuracy and reliability of information obtained through questionnaires. To avoid this problem, the current study determined the prevalence of stereotyped and other abnormal behaviors in thoroughbreds in Chile using direct researcher observations. Our objective was to obtain accurate information from a uniform population, contributing comparative data to build a better picture of the factors influencing stereotypies in horses.

2. Materials and Methods

Seven hundred forty-three thoroughbred racehorses of different ages and sex, housed at two racetracks (A and B) in Santiago, Chile, were observed during autumn and winter seasons. At racetrack A, 417 horses were observed within 14 yards, and at racetrack B, 326 horses were observed within 13 yards. The visits to the racetracks were performed during the morning, observing the horses by scan sampling, every 5 minutes, during the 30 minutes before and 30 minutes after their food ration was delivered, adding a total of 12 scans per horse. If a horse exhibited one of the abnormal behaviors in any of the scanning times, it was counted as one.

Each day, a different yard within the racetrack was visited; each yard had between 10 and 60 individual boxes where horses belonging to different owners are permanently housed. An individual record sheet was used to register the presence of the abnormal behaviors, and a questionnaire was administered to the person in charge of the horses. Each behavioral disorder was defined in an ethogram (Table 1).

Information about sex, age, social contact between boxes (none, visual, or visual and tactile), bed type (straw, wood shavings, or other), feeding (roughage and concentrate quantity and delivery times), and training routine was collected. The use of methods to impede or prevent stereotypic behaviors was also registered. Data were analyzed using descriptive statistics, prevalence rates were calculated, and the association between each factor and the presence of the behaviors observed was determined using the χ^2 test; 2×2 contingency tables were used with the Statistix 8 software (Tallahassee, Florida). The level of significance was established at $P < .05$.

Table 1
Ethogram of the stereotypies and other abnormal behaviors observed

Behavior	Description
Crib-biting/wind sucking	The horse may or not support the upper front teeth against any solid material. It tenses the muscles of the neck, forcing air into the cranial portion of the esophagus, making a characteristic noise. The horse can lick the object before and after the fixing.
Weaving	The animal moves the head from side to side. This rhythmic movement can involve neck, forelimbs, and even hind limbs. Most of the times it is performed standing with the head out of the stable, but it can also be done standing in the middle of it.
Box walking	The horse wanders in circles inside the box, walking, trotting, or galloping. If there is more space, it can make more complex circuits.
Nodding	Reiterative movements from the head up and down.
Stall kicking	Knocks with the hind limb hoofs against the wall of the stable.
Pawing	One forelimb a little lifted, then quickly extended forward, followed by a caudal movement, dragging the toe like a digging movement.
Wood chewing	The horse chews and ingests wood, fixing to objects (like the stall door or protruding planks) to pull out wood pieces and eat them.
Coprophagia	To eat the own feces or the ones from other individuals.
Bed eating	The horse ingests the bed material of its stable.
Eating or licking objects	To lick or bite any object without nutritional purpose.

Definitions adapted from McDonnell [27] and Tadich and Araya [5].