



## Original Research

# Proposal and Validation of a Scale of Composite Measure Reactivity Score to Characterize the Reactivity in Horses During Handling



Raquel Ferrari Calviello<sup>a</sup>, Evaldo Antonio Lencioni Titto<sup>a</sup>, Paulo Infante<sup>b</sup>,  
Thays Mayra da Cunha Leme-dos-Santos<sup>a</sup>, Marcos Chiquitelli Neto<sup>c</sup>,  
Alfredo Manuel Franco Pereira<sup>d</sup>, Cristiane Gonçalves Titto<sup>a,\*</sup>

<sup>a</sup> Laboratório de Biometeorologia e Etologia, Faculdade de Zootecnia e Engenharia de Alimentos, Universidade de São Paulo/USP, Pirassununga, SP, Brazil

<sup>b</sup> Departamento de Matemática Universidade de Évora, Centro de Investigação em Matemática e Aplicações, Évora, Portugal

<sup>c</sup> Departamento de Biologia Aplicada a Agropecuária, Faculdade de Engenharia de Ilha Solteira, Universidade Estadual Paulista Júlio de Mesquita Filho, Ilha Solteira, SP, Brazil

<sup>d</sup> Departamento de Zootecnia, Instituto de Ciências Agrárias e Ambientais Mediterrânicas, Universidade de Évora, Évora, Portugal

## ARTICLE INFO

## Article history:

Received 12 February 2016

Received in revised form 11 July 2016

Accepted 5 August 2016

Available online 13 August 2016

## Keywords:

Foal

Mare

Score of behavior

Temperament

## ABSTRACT

This study aimed to identify the parameters related to the expression of the reactivity in horses during handling and based on that proposed and validated a scale of composite measure reactivity score to characterize horse's reactivity. To this end, the first stage (S1) proposed the scale and the second (S2) validated it. In S1, 364 Lusitano horses were evaluated, 188 were adult breeding mares (4–12 years old), and 176 were foals (males/females, aged from 2 months to 2 years). During hooves trimming, vermifuge application, palpation scores were assigned to behaviors of movement, ears and eyes position, breathing, vocalization, and urination. A response parameter called reactivity was attributed to each animal, ranging from score 1 (nonreactive/calm) to score 4 (very reactive/aggressive). The verification of the possible parameters (age, behavior), which explains the response parameter (reactivity), was taken using ordinal proportional odds model. Movement, breathing, ears and eyes position, vocalization, and age appear to explain the reactivity of horses during handling ( $P < .01$ ). Therefore, based on these parameters, it was possible to propose two scales of composite measure reactivity score: one to characterize the mares and another the foals. On S2, the proposed scale was validated by the simultaneous application of Forced Human Approach Test, another commonly used test to evaluate the reactivity in horses, with a correlation of 0.97 ( $P < .05$ ). The assessment of the reactivity of horses during handling by a composite measure reactivity score scale is valid, and easy to apply, without disrupting daily routine and override the impact of individual differences.

© 2016 Elsevier Inc. All rights reserved.

\* Corresponding author at: Cristiane Gonçalves Titto, Faculdade de Zootecnia e Engenharia de Alimentos, Universidade de São Paulo/USP, Av. Duque de Caxias Norte, 225, Campus da USP, 13635-900, Pirassununga, SP, Brazil.

E-mail address: [crisgtitto@usp.br](mailto:crisgtitto@usp.br) (C.G. Titto).

## 1. Introduction

Successful relationship between humans and horses is important for the use of animals during equestrian activities such as leisure, sport, or riding. The way horses react to human results from the interaction between the animal temperament, temperament and skills of humans, and

experience acquired by the animal through contact with humans [1]. Moreover, the performance and suitability of the horse in an equestrian modality can also be affected by its temperament [2]. A temperament trait is generally defined as individual differences in behavior that are present early in life and are relatively consistent during time and through the different situations [3].

Studies involving the temperament of horses have focused on aspects such as emotionality or emotional reactivity, learning ability, and reactions to human presence or reactivity to humans, which are most relevant traits to achieve optimal performance in those animals [4]. However, because the study of temperament is complex and there are several terminologies and different methodologies involved, the assessment of the temperament becomes difficult. Therefore, it is essential to clarify the aspect of temperament that needs to be evaluated.

In this context, this study will use the concept of reactivity, which appears as an aspect of temperament defined as behavioral expression during handling, generally attributed to fear and associated with stimuli caused by human presence [5].

In practice, the reactivity in horses has been studied by the dissociation of methodologies that assess fear through the aspect of temperament called emotional reactivity [6,7] and situations of confrontation with humans through the aspect of reactivity to humans [8,9].

These studies have used a variety of experimental techniques, such as arena tests, in which the horse is loose in a familiar environment [6]; the open field tests, in which the horse is loose in an unfamiliar environment [2]; the novel object tests in which the horse is presented a new static or moving object [10]; tests that assess the presence of a passive or active human [8]; the bridge test, which consists of a manipulator leading the animal in an unknown surface [11]; reactivity test performed during the evaluation of the conformation of the horse [12,13], and reactivity assessed in situations as feeding, riding, and turning out [14].

In the investigation of sheep and cattle reactivity, the frequently used tests are the restriction test, which punctuates the animals through scale of composite measure reactivity score, and the test of disturbance, measured when the animal is subjected to a given handling situation in the pen, such as weighing [15–17]. The application of scale of composite measure reactivity score during handling has not been used as a methodology to characterize the reactivity of horses. However, the development of a detailed methodology to assess the reactivity of equine during handling becomes necessary since the reactivity is one aspect of temper expressed by the animals during handling.

The term reactivity is specific to each individual because each animal exhibits different behavior which might be indicative of a same level of reactivity. For example, an animal that is very reactive may express this by “freezing” and other animal with the same level of reactive also may display the agitation as a manifestation of their reactivity. The combination of different behaviors within a composite score scale may override the impact of individual differences, making the animal reactivity evaluation more

detailed and explanatory. Therefore, this study aimed to identify the parameters related to the expression of the reactivity of horses during handling and to propose and validate a scale of composite measure reactivity score, based on these parameters, to characterize the reactivity of horses.

## 2. Materials and Methods

This study was conducted in two stages, which will be detailed subsequently. The first stage was performed to identify parameters that are related to the expression of reactivity of horses during handling. In addition, during the first stage, it was also proposed a composite score scale of behavior for characterization of reactivity from parameters which can explain reactivity of horses.

The second stage a study was done to validate the scale of composite measure reactivity score in horse during handling, proposed in the first stage.

### 2.1. First Stage

#### 2.1.1. Animals and Local Used

The first stage was conducted on a Lusitano horse breeding farm located in Itapira, São Paulo, Brazil, and all procedures were approved by the Ethics Committee of the University of São Paulo, Brazil, under n°. 12.1.755.74.9.

A total of 364 animals comprising 188 adult breeding mares (4–12 year old) and 176 foals (77 males and 99 females) between the ages of 2 and 4 months (P1), 5 and 6 months (P2), 10 and 12 months (P3), 13 and 14 months (P4), and with 2 year old (P5) were observed.

The animals used in this study were maintained on pasture, grouped according to the age, and have fed in the trough once daily. The groups of mothers were separated according to the gestational state (empty, pregnant, and mares with their newborn foals). The foals were kept with their mothers until the age of 6 months, after that time, they were weaned and grouped according to sex and age.

In this property, the breeding season begins in September and extends through February. The beginning of the reproductive phase of the mares is at 4 years old. The breeding mares observed in this study were not tamed; the halter was used to facilitate handling. The foals did not use the halter.

#### 2.1.2. Trial Period and Data Collection

The methodology used in this stage did not interfere in the daily activities of the property, and hence, the behavioral assessments of the animals were carried out during the programmed handling routine.

The observations were performed during hooves trimming ( $n = 176$  foals), vermifuge application ( $n = 176$  foals; 188 mares), and palpation ( $n = 188$  mares). Each animal was observed twice for each activity, during a period of 60 days.

The animals were used to handlers and handling facilities. The professional team was consisted of two handlers responsible for vermifuge application, a veterinarian responsible for palpation, and two technicians for hooves trimming.

Download English Version:

<https://daneshyari.com/en/article/2394320>

Download Persian Version:

<https://daneshyari.com/article/2394320>

[Daneshyari.com](https://daneshyari.com)