Journal of Veterinary Behavior 9 (2014) 329–340

Contents lists available at ScienceDirect

Journal of Veterinary Behavior

journal homepage: www.journalvetbehavior.com

Research

Practical considerations regarding the implementation of a temperament test into horse performance tests: Results of a large-scale test run

Patricia Graf*, Uta König von Borstel, Matthias Gauly

Department of Animal Sciences, University of Göttingen, Gottingen, Germany

ARTICLE INFO

Article history:
Received 24 September 2013
Received in revised form
12 August 2014
Accepted 19 August 2014
Available online 23 August 2014

Keywords:
novel object test
temperament
personality
horse
performance traits
performance tests

ABSTRACT

Considering the ever-growing demand of various breeding organizations for an objective, inexpensive, reliable, and easily conducted assessment of the behavior of horses, the aim of our study was to implement a novel-object test and a startling test into any kind of breeding performance testing to assess horses' temperament. Additionally, the influence of testing areas (familiar or unfamiliar), riders, and horse factors such as levels of training, breed, and age were of interest. Furthermore, recommendations for the practical implementation concerning the parameters should be given. Therefore, 1,028 horses over a period of 3 years participated in a temperament test consisting of 5 different stimuli. The horses were either ridden (61.8 %) or led by hand (38.2 %) by an unfamiliar professional rider (N = 43) or a familiar rider (N = 20). Live behavioral observations were taken by a trained observer. Overall, horses' scores for reactivity in the present temperament test were distributed over the whole scale, with lower means and higher standard deviations (6.7 ± 2.2-7.6 ± 2.1) than corresponding scores from the conventional personality evaluation in performance tests (7.7 ± 0.8-8.2 ± 0.5; $P < 0.01$). High correlations ($r = 0.3$-0.9; $P < 0.001$) between the scores for reactivity and the other behavioral parameters (emotional expression, activity, time to calm down, rider's aids) show a large influence of these parameters in assessing the horses' temperament. Factors like breed type, sex, and age had significant influences ($P < 0.001$) on different scores of the temperament test. In most cases, the rider or handler had no influence on the different scores assessed during the temperament test. The training level and the testing modus never had a significant influence on different scores. Only the testing station or location had a small influence on the scores for the stimulus "bridge" in some horses. Based on the results, it could be concluded that an implementation of a temperament tests into performance testing is possible during various types of testing procedure. Especially the assessment of reactivity, emotional expression, interest in the stimulus and rider's aids during and after passing the stimulus, as well as the time to calm down are important parameters for analyzing the horses' personality.

Introduction

Personality traits play an important role in horses for various reasons. First of all, the behavior of horses influences their quality as a riding partner (Visser et al., 2010). Horses with balanced temperament simplify daily work, make handling more comfortable, and are important for sporting aspects according to various horse enthusiasts (Graf et al., 2013b). Additionally, a horse's personality is important for accident prevention. One quarter of all accidents with horses are a result of an immoderate fright reaction (Keeling et al., 1999; Thomas et al., 2006). Especially, nonprofessional riders have a higher injury risk (Abu-Zidan and Rao, 2003). Another reason is the efficiency in training of horses with balanced temperament and character. Heird et al. (1986) found that horses with a calmer temperament learn faster. As a consequence, the training could be more effective, and the education of these horses would be more economical. In addition, various authors found that horses with a good character and a balanced temperament are worth more money (Crossman and Walsh, 2006; Teegen et al., 2008; Graf et al., 2013b).

This study was financially supported by the German Equestrian Federation e.V.

* Address for reprint requests and correspondence: Patricia Graf, Department of Animal Sciences, University of Göttingen, Albrecht-Thaer-Weg 3, Gottingen 37075, Germany. Tel: +49 172 2740949; Fax: +49 551 39 5587.
E-mail address: p_graf@web.de (P. Graf).

1558-7878/$ – see front matter © 2014 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jveb.2014.08.004

Leisure riders, especially, are willing to pay up to 5% more for horses that pass a professional personality assessment (Graf et al., 2013a). For these various reasons, personality traits such as character, temperament, and willingness to work are anchored in the breeding goals for riding horses in most breeds (Koenen et al., 2004). In 11 of 19 European breeding associations to which the German Riding Horse population may belong, behavior is included in the breeding goal definition (Mills, 1998). Additionally, the breeding goal specifies that horses, based on their character, temperament, and rideability, have to be suitable for riding purposes of any type (FN, 2010). These traits are thus the most important ones in riding horses.

The current assessment of character and temperament in riding horses takes place during performance testing over several weeks (station) especially in stallions in most European countries (Mills, 1998). In case of 1-day performance testing (field), generally no behavior evaluation is implemented. For that reason, only approximately 5 % per birth cohort receive an assessment of behavior traits (FN, 2011). However, this assessment is characterized by a subjective scoring system and deficient guidelines which include insufficient and overlapping definitions of the traits (Górecka-Bruzda et al., 2011; Pasing et al., 2011; Pasing and König von Borstel, 2012). High means with low variation in horses' personality traits result in an inefficient selection and no genetic improvement. To improve this situation in horses many efforts have been made, under experimental conditions, especially to measure fear reactivity, activity, reactivity, emotionality, and exploration (e.g., Christensen et al., 2005; König von Borstel et al., 2011a; Lansade and Bouissou, 2008; Visser et al., 2001; Wolff et al., 1997). Under practical conditions, just a few horse-breeding associations such as the Franches-Montagnes horses (Burger et al., 2007) tested or implemented behavior and temperament tests in current performance testing. These tests usually use novel-object based temperament tests to assess fear reactions to the different stimuli. However, they are limited to the breeding association's specific breed.

Considering the ever-growing demand of various breeding organizations for an objective, inexpensive, reliable, and easily realizable assessment of the behavior of horses, the aim of our study was to implement a behavior test into any kind of breeding performance testing throughout Germany, fulfilling all these parameters. Based on the results of Schmidt (2009) and König von Borstel et al. (2012), our testing procedure was refined and evaluated in a large number of horses under practical conditions.

Materials and methods

Animals, locations, and riders

Over the course of 3 years, a total of 1,028 horses participated in the temperament test, split into 255 horses in the first year, 315 horses in the second year, and 458 horses in the third year. On average, the horses were aged 7.4 ± 5.5 years. Age was tested both as a linear variable and as a class variable. Therefore, the ages were divided into 5 classes according to their level of education: 0-3 years (inexperienced horses; N = 268), 4-6 years (broken-in horses; N = 335), 7-9 years (young horse class; N = 123), 10-15 years (middle-aged horses; N = 173), and >15 years (older horses; N = 112). There were 148 stallions (14.4 %), 238 geldings (23.2 %), and 641 mares (62.5 %). Horses had been trained under the saddle for an average of 54.6 ± 59.2 months, ranging from totally inexperienced horses (0 month of training; N = 29) to very experienced horses (>200 months of training; N = 38). A total of 509 horses were warmbloods (WBs; 49.7 %) with <50 % Thoroughbreds (TBs) in the pedigree. WBs with at least 50 % TBs (N = 62; 1 parent or 2 grandparents were TBs) were pooled with the Arabian horse and TBs (N = 25) to the breed TBs (TB; 8.5 %). Other breeds were 34.4 % ponies (POs; N = 355), 5.9 % draft horses and heavy WBs (N = 61), and 1.1 % others such as Quarter Horse or special breeds. This classification was done because of the common framework breeding goal of all German riding horses constituted by the German Equestrian Federation (FN, 2010). Additionally, German riding horse breeds are closely related (Haman and Distl, 2008; Sitzenstock, 2008), justifying placing these horses into one group. The WBs that participated in the temperament test were all registered in one of the various German breeding organizations, and also the ponies belonged to common studbooks.

Data were collected from March 2009 till July 2011 at a total of 55 locations throughout Germany which were provided by 11 breeding associations as well as 30 private studs or stables. Testing was conducted on different days per location, with 1 day per location. At 9 different mares' 1-day breeding performance testing 202 mares, 4 stallions, and 1 gelding participated in the temperament test. At 6 mares' breeding performance testing on station, 112 mares, 1 stallion, and 4 geldings participated, whereas 124 stallions took part at 4 stallion breeding performance testing on station. Additionally, 69 mares participated during 4 studbook inspections; 9 mares and 1 filly participated at 1 foal inspection. At the 13 riding clubs, 76 mares, 1 stallion, and 96 geldings participated, whereas at the 19 private stables, 173 mares, 18 stallions, and 137 geldings took part in the temperament test. The temperature during data collection varied between −4°C and 31°C (mean ± standard deviation [SD]: 15.8 ± 7.9°C).

The horses were ridden (61.8 %) or led by hand (38.2 %) either by an unfamiliar professional rider (n = 21 riders) at the performance tests, studbook inspections, and foal inspections or by their familiar (n = 22 riders or handlers), or by an unfamiliar rider (n = 20 riders) at the riding clubs and at the private riding stables. Thus, there were a total of 63 different riders or handlers involved in the experiment. This mixture of handling or riding approaches was chosen to also include unridden horses and also because our earlier research (König von Borstel et al., 2011b) generally showed a high agreement between the ridden and led temperament test. To allow for a correction for rider effects, it was attempted to have at least 2 riders per testing station.

Before participating in the temperament test, all horses were trained according to their normal routine. This means that all ridden horses were trained for at least 30 minutes with a short break before joining the test. Exceptions were the young unridden horses that had no training before the test. The horses tested during their mare performance test had a session of free jumping, a dressage ride of at least 30 minutes, and a 10 minutes ride with a professional test rider (routinely testing procedure of 1-day mare performance tests) before participating in the temperament test.

Experimental set-up

The stimuli in this temperament test were selected according to the following guidelines: easy realization, low injury risk, and objective and reliable measurements. According to these guidelines, the pilot studies by Schmidt (2009) and König von Borstel et al. (2012) conducted under standardized conditions yielded various possible stimuli for this temperament test. However, in most cases, under practical circumstances no separate riding arena for conducting the temperament test was available. Thus, very frightening stimuli could badly scare the horses and thereby impede them in the preparation for their breeding performance test. Similar problems were seen with visual and auditory stimuli, as habituation could take place in horses that are exposed to the stimulus from a distance while waiting for their turn in the temperament test. Therefore, only the stationary ball remained