with horses. Body language may also influence results of scientific studies. Research on preferences or cognitive abilities in horses often use choice experiments combined with operant conditioning. Recent studies have thus demonstrated that horses prefer bigger quantities of food than smaller quantities, that they have prospective memory, and that they can communicate with people using symbols. These results may be true but because the experimental horses are handled by people right before they make their choice it is not possible to tell whether their choice is their own or whether it has been influenced by the body language of the handler. To be valid this kind of experiment must eliminate any possibility of human influence.
Keywords: body language; communication; safety; handling

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Developing a descriptive reference ethogram for Equitation Science

M. PIERARD [1,*], *P. MCGREEVY* [2], *R. GEERS* [1]
[1] *KU Leuven, Department of Biosystems, University of Leuven, Belgium*
[2] *Sydney School of Veterinary Science, University of Sydney, NSW 2006, Australia*
**Corresponding author: Marc.Pierard@kuleuven.be*

There is currently no gold standard for nomenclature and definitions of equine behavior units. The ultimate goal of an ethogram for a particular species is to provide a list of behaviors and their function. However, agreement on function, causation or ontogeny is difficult to reach without accurate descriptive definitions of the various behavior units. A descriptive reference ethogram would increase the validity, reliability and compatibility of studies, without compromising the flexibility needed. A test of the reliability of a descriptive reference ethogram for horses was conducted using a test panel comprising 13 Equitation Science researchers and 10 high-level practitioners. Panellists scored behaviors in 30 short video clips, using a partial ethogram containing 21 behaviors, including locomotor behaviors, lying down, getting up, rolling, striking and kicking. Statistical analysis using logistic mixed models indicated that the variability between observers was very low (covariance parameter estimate <0.0001) and much lower than the variability between video clips (covariance parameter estimate = 0.15, standard error = 0.05), indicating a high reliability. Scoring by researchers and practitioners showed no significant difference. Training of panelists was limited to 5 demonstration video clips with explanations and instructions on how to score the clips. It would be useful to investigate the influence of more specific training on the reliability of an ethogram. Feedback from panel members will be included in the development of the descriptive reference ethogram. Ethograms and their behavioral definitions represent measuring units for behavior. This study showed that agreement on descriptive definitions is possible.
Keywords: reference ethogram; behavior unit; descriptive definition; reliability

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Decreased eye-blink rate as a non-invasive measure of stress in the domestic horse

A. GARNETT [1], *K. MERKIES* [1,2,*]
[1] *Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada*
[2] *Campbell Centre for the Study of Animal Welfare, University of Guelph, Guelph, ON, Canada*
**Corresponding author: kmerkies@uoguelph.ca*

Eye blink rate (EBR) has been successfully used as a non-invasive measure of stress in cattle and humans, and this study sought to validate this measure in horses. Each of 15 horses were randomly subjected to the known stressors of (1) separation (SEP) – horse removed from visual contact with its paddock mates; (2) feed restriction (FR) – feed withheld at regular feeding time; and (3) startle test (ST) – a ball suddenly thrown on the ground in front of the horse while alone in the arena, and compared to control (CON) – horse in its normal paddock environment. Full eye blinks, half eye blinks and eyelid flutters of the right eye were retrospectively determined from video recordings. A one-tailed mixed-model procedure with Sidak's multiple comparisons of least square means demonstrated that both full blinks (3.0 ± 0.43^{b} vs 4.3 ± 0.66^{ab} vs 3.8 ± 0.61^{b} vs 6.2 ± 1.16^{a} full blinks/min±SEM in, SEP, FR, ST and CON respectively where a,b differ, $F_{3,39}=4.83$, $P=0.006$) and half blinks (8.7 ± 0.97^{bc} vs 11.5 ± 1.22^{ab} vs 7.1 ± 0.95^{c} vs 12.9 ± 1.31^{a} half blinks/min±SEM in, SEP, FR, ST and CON respectively where a,b,c differ, $F_{3,39}=8.99$, $P<0.0001$) decreased during potentially stressful situations. Eyelid flutters were more frequent in FR than any other treatment (1.3 ± 0.36^{b} vs 4.2 ± 0.69^{a} vs 1.3 ± 0.44^{b} vs 1.3 ± 0.22^{b} flutters/min±SEM in SEP, FR, ST and CON respectively where a,b, differ, $F_{3,39}=8.76$, $P<0.0001$). These preliminary results suggest that a decrease in full and half blinks concomitant with an increase in eyelid flutters can be used as a non-invasive measure of stress in horses, allowing insight into a horse's affective state.
Keywords: eye blink rate; stress; behavior; heart rate

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Clicker training in horses; the importance of the time between click and reward

I. HUISMAN [1,*], *S. VAN IWAARDEN* [1], *E. HUGHES* [2], *A. MCLEAN* [3]
[1] *Van Hall Larenstein University of Applied Science, Larensteinselaan, 26a 6880 GB Velp, The Netherlands*
[2] *Australian Equine Behavior Centre, 730 Clonbinane Rd, Clonbinane, VIC, 3658 Australia*
[3] *ESI-education, Basinghall, 3 Wonderland Ave, Tuerong, VIC, 3915, Australia*
**Corresponding author: Iris_huisman1991@hotmail.com*

Timing of reward is very important when training horses. Incorrect timing can lead to confusion and deleterious behaviors and learning will be impaired. Clicker training can be used as an important tool in training. However, the optimal timing between the secondary and primary reinforcer remains unclear in the scientific literature. Fifteen horses were divided into three treatment groups; all were trained to touch a target through clicker training. Group 1 (n=5) was immediately rewarded after the click, group 2 (n=5) was rewarded 10 seconds after the click and group 3 (n=5) was rewarded 20 seconds after the click. All horses received a maximum of 20 training trials, with a maximum duration of 60 seconds per trial. When the horse touched the target 10 consecutive times with its nose, achieving the training criterion, training trials were stopped. A Kruskal-Wallis pairwise test showed a significant difference in learning a simple behavioral task between groups 1 and 2 (H_2=-31.955, $P<0.05$) and between groups 1 and 3 (H_2=-44.819, $P<.05$). There was no difference found between group 2 and 3. Most horses from group 1 (n=4, 80%) reached the training criterion, two from the five (40%) in group 2 reached criterion and only one from group 3 (20%). The results of this small study suggest that immediate delivery of primary reinforcement is most effective and that as the time increases between the secondary and primary reinforcers, learning efficiency declines. These results confirm that timing is important for the efficacy of secondary reinforcement.
Keywords: clicker training; learning theory; horse; timing

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A code of welfare for horses and donkeys: establishing standards for the welfare of equids in New Zealand

N. CROSS[*]
Animal Welfare Team, Regulation and Assurance Branch, Ministry for Primary Industries, Pastoral House, 25 The Terrace, Wellington, 6011, New Zealand
**Corresponding author: nicki.cross@mpi.govt.nz*