Object habituation in horses: Voluntary vs. negatively reinforced approach to frightening stimuli

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The ability and ease of horses to habituate to frightening stimuli greatly increases safety in the horse-human relationship. Several different techniques have been suggested for habituation training of horses and under certain conditions, preventing animals from avoidance reactions during exposure to frightening stimuli is believed to facilitate habituation. Response prevention does, however, lead to a loss of control, which is a known stress inducer in both animals and humans. This experiment investigated whether horses show increased stress responses when negatively reinforced to approach a mildly frightening stimulus, compared to horses allowed to voluntarily explore the same stimulus. We further investigated whether the prevention of avoidance responses in horses that are negatively reinforced to approach the stimulus, facilitates habituation to the stimulus. Twenty-two 2-3 years old Danish warmblood geldings were included in the study. Half of the horses (NR group) were negatively reinforced (through halter and rope pressure) by a familiar human handler to approach a collection of frightening objects (six open and colourful umbrellas) placed in a semi-circle in a familiar test arena. The other half of the horses were released in the arena and were free to avoid or explore the objects (VOL group). On the next day, all horses were exposed to the objects again without a human to investigate the rate of habituation. Behavioural and heart rate responses were recorded on both days. Data were analysed in a two way repeated measures ANOVA and post hoc analysed via the Holm-Sidak method. In the VOL group, all horses initially chose to avoid the unknown objects, whereas the handler managed to get all horses in the NR group to approach and stand next to the objects within the first 2-min session. As expected, horses in the NR group had a significantly longer duration of alertness (sec, mean ± se: NR: 23 ± 4.1 vs. VOL: 16 ± 4.7, P=0.026) and a higher max HR in the first session (bpm, mean ± se: NR: 106 ± 5.2 vs. VOL: 88 ± 4.4, P=0.004). On the next day, however, the NR horses spent significantly less time investigating the objects (sec, mean ± se: NR: 13 ± 4.1 vs. VOL: 24 ± 6.0, P=0.005) and had a shorter latency to approach a feed container, placed next to the objects (sec, mean ± se: NR: 25 ± 3.9 vs. VOL: 47 ± 16.2, P=0.031), indicating increased habituation. In conclusion, negatively reinforced approach to mildly frightening objects appears to increase stress responses during the initial exposure, but also to facilitate habituation in young horses.

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