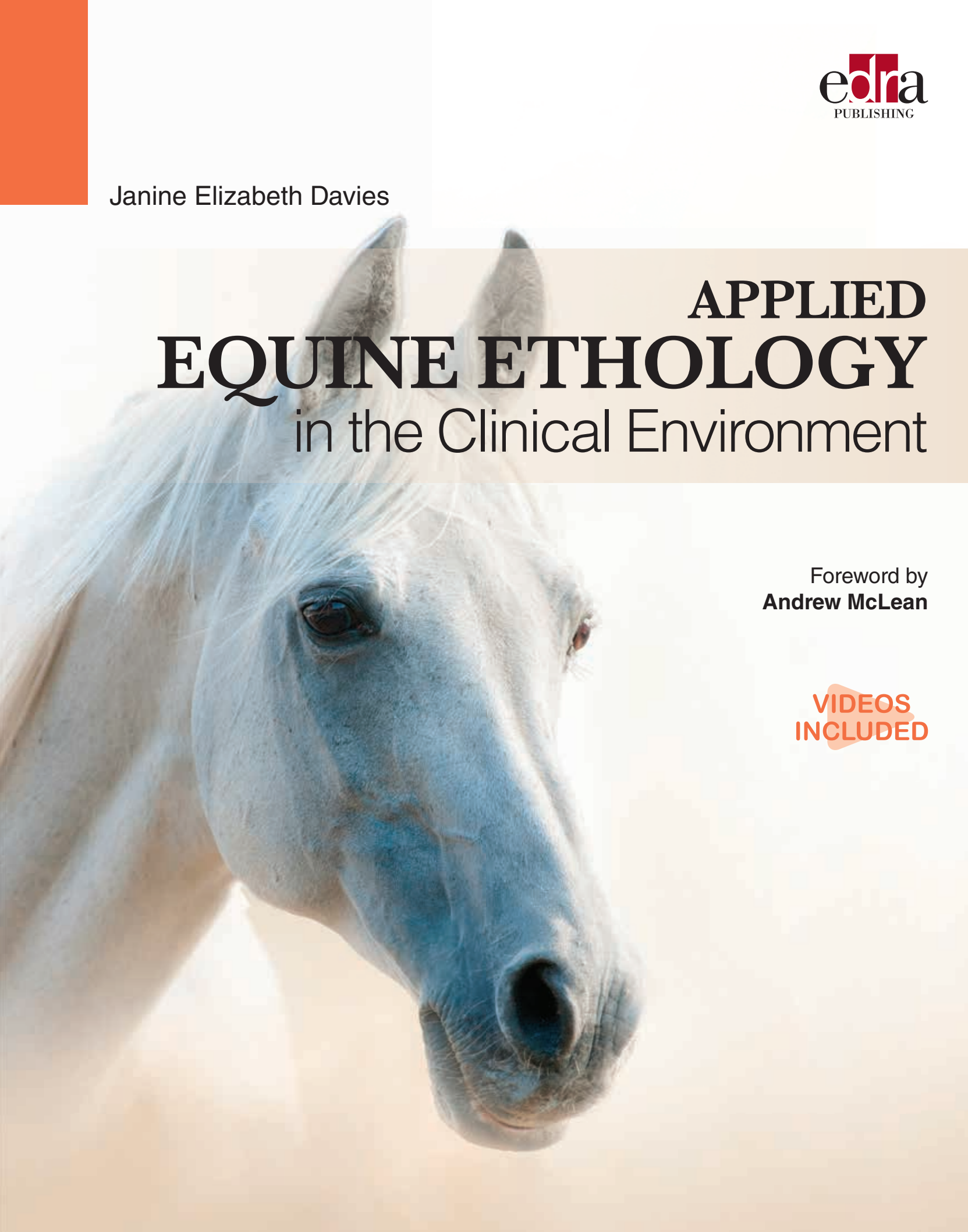


Janine Elizabeth Davies



APPLIED EQUINE ETHOLOGY

in the Clinical Environment

Foreword by
Andrew McLean

**VIDEOS
INCLUDED**

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GAINING STIMULUS CONTROL

10

This chapter is designed to give the equine veterinary surgeon a greater understanding of the concept of stimulus control. Practitioners are not expected to be horse trainers; however, it is important to be able to recognise losses of stimulus control and identify probable causes (Fig. 1). It is essential that we have sufficient awareness to oversee the humane management of equine patients in our care.

In an ideal world, a horse responds quietly, calmly and promptly to the handlers' cues (Fig. 2) and is able to block out any external stimuli from the environment. In practice, we know that this is not always the case, and the response can further deteriorate when the animal is in discomfort.



FIGURE 1. The handler temporarily lost stimulus control of this horse when he was suddenly aroused by horses galloping around nearby.



FIGURE 2. This horse is calmly moving over from whip taps on his shoulder.

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However, in the equestrian industry, horses with challenging behaviours are frequently labelled naughty, stubborn or evil, and little or no action is taken to change the situation.

Horses that display challenging behaviours can be rehabilitated and these behaviours significantly reduced or eradicated.

There may not be enough time or we may not have sufficient confidence nor ability to address losses of stimulus control

when visiting our patients. But what we can do is give informed advice and also recommend a professional equine behaviourist or horse trainer who employs humane methods and repeatedly produces calm and willing animals.

Two factors are necessary to attain stimulus control. The first is that the animal is sufficiently desensitised to the environment and therefore no longer reacts to it (Fig. 3). The second, and often overlooked, is that the horse understands the question (e.g. a pressure cue to walk forwards) and associates the correct response to the cue (takes a step forwards from a light aid immediately) (Fig. 4).



FIGURE 3. After shaping and refining stimulus control in a multitude of different environments, together with the application of an extensive desensitisation programme, this horse could be ridden without a bridle during live demonstrations.



FIGURE 4. This mare's forward response is put to the test by asking her to walk on a raised surface.

CASE STUDY: *HELIOS***Name:** *Helios***Age:** 9 years**Breed:** Pura Raza Española**Sex:** gelding**Lifestyle**

Helios lives out in a paddock with a shelter. He does not have a field companion; however, there are two geldings in adjacent paddocks with whom he interacts over the fence. He can see a number of other horses, the riding arena, the driveway and the tack up area from his location.

Personality

Helios is an extroverted and sensitive horse with a tendency towards hyperreactivity. He has a very friendly disposition towards humans (Fig. 5).



FIGURE 5. *Helios* approaches his handler in a friendly manner as she takes a break from the heat in the shade.

History

He was gelded just over a year before this initial assessment, after he lost his left eye in an accident (Fig. 6), and can still display some typical stallion behaviours. Prior to the injury, he was successfully competing in dressage, but he was subsequently sold and moved on and is now in light work.

INITIAL ASSESSMENT

Challenging behaviours

Difficulty leading, reluctant to go forwards and backwards, prone to bouts of hyperreactivity, reeving (horse forcefully tries to pull the lead rope out of your hand), head tossing, nipping, barging, insecure when approached from the left side (Fig. 7).

Aetiology of challenging behaviours

Helios performs well and has a good level of training under saddle. However, the more undesirable conduct arises whilst handling him (when he is not being handled, he is very sweet-natured towards humans). He frequently offers incorrect responses to pressure cues; for example, when prompted to walk forwards he may dig his heels in and refuse to move, bolt forwards or reef and attempt to nip the handler. It is likely that his groundwork was overlooked as a youngster and responses to pressure cues on the ground were not established, as efforts were focused on his dressage performance.

As well as the incorrect responses previously mentioned, his reaction is frequently heavy and delayed, with a tendency to push his muzzle and teeth into the handler's arm.



FIGURE 6. *Helios* underwent a surgical enucleation just over a year before the initial assessment.

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FIGURE 7. *Helios* at times offers the incorrect response. Digs his heels in and is reluctant to move forwards (a). Engages in rearing when requested to take a step back (b).

Spontaneous recovery

Once a horse has successfully been retrained, when a situation of sufficient arousal and similarity arises, they can revert back to their previous challenging behaviours through a process called spontaneous recovery, whereby the memory that initiated the undesirable response in the first place is recovered (Fig. 8). This may seem like a step backwards; however, it will be easier to regain control each time this happens as the newly trained, desirable behaviours become more established.



FIGURE 8. This mare used to compete in eventing and had a habit of lying down in the water jump. The behaviour ceased once she was retired from this type of competition. However, years later, at a trail clinic, due to the similarity of the task, the memory was recovered and the behaviour triggered once again.

Task analysis

Behaviours are broken down into individual responses to cues with the intention to retrain them one at a time. At the time of this assessment, *Helios* had associated the following conflicting responses to pressure cues:

- Forward pressure on the lead rope to elicit forward steps: associated with reefing, nipping/pressing teeth into the handler's arm, barging, hyperreactivity, head tossing, reluctance to move forwards and a heavy and delayed response (Fig. 9).
- Backward pressure on the lead rope to elicit stop and backward steps: associated with reefing, nipping/pressing teeth into the handler's arm, barging, hyperreactivity, head tossing, reluctance to perform and a heavy and delayed response (Fig. 10).
- Pressure applied to the shoulder to elicit moving over: associated with nipping/pressing teeth into the handler's arm, barging (Fig. 11) and reluctance to perform.
- Handler approaches left side (horse is immobile): associated with the horse turning his head so that it is in the way hampering/blocking access to his left side (Fig. 12).

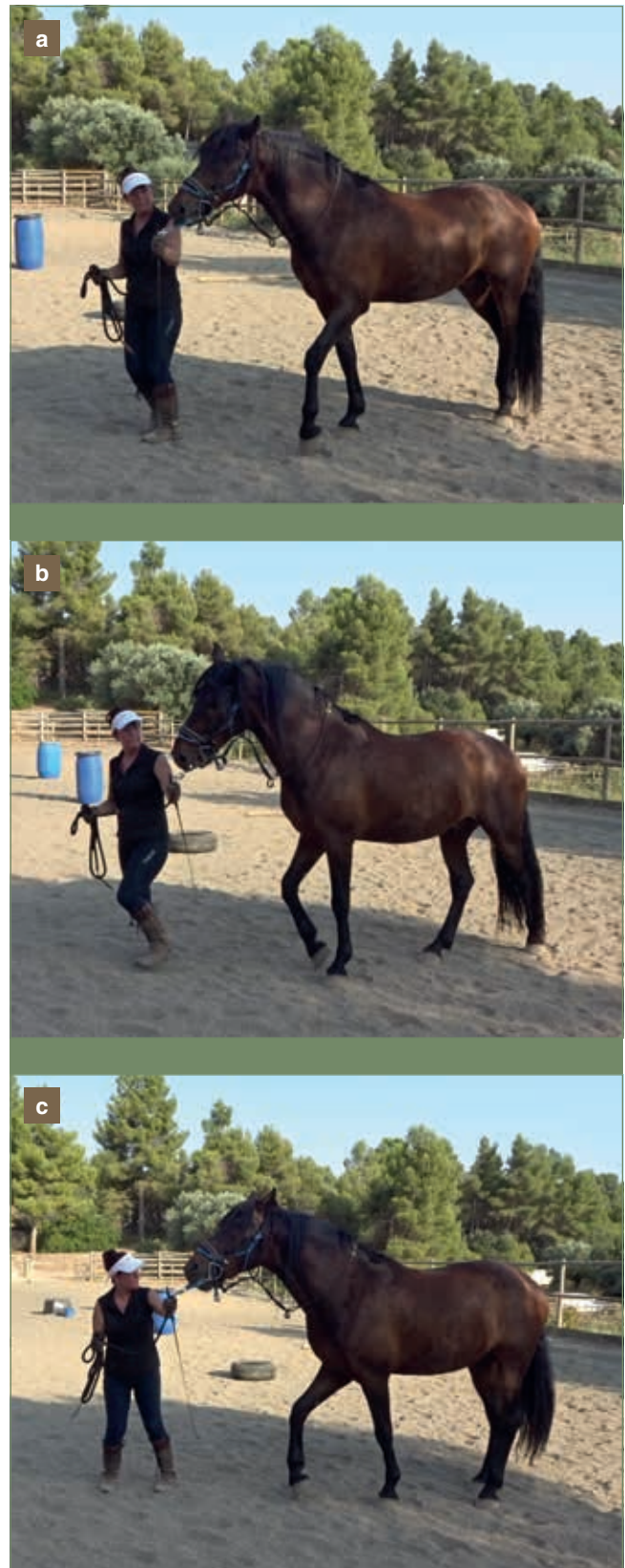


FIGURE 9. *Helios*' response is heavy and delayed when requested to move forwards.

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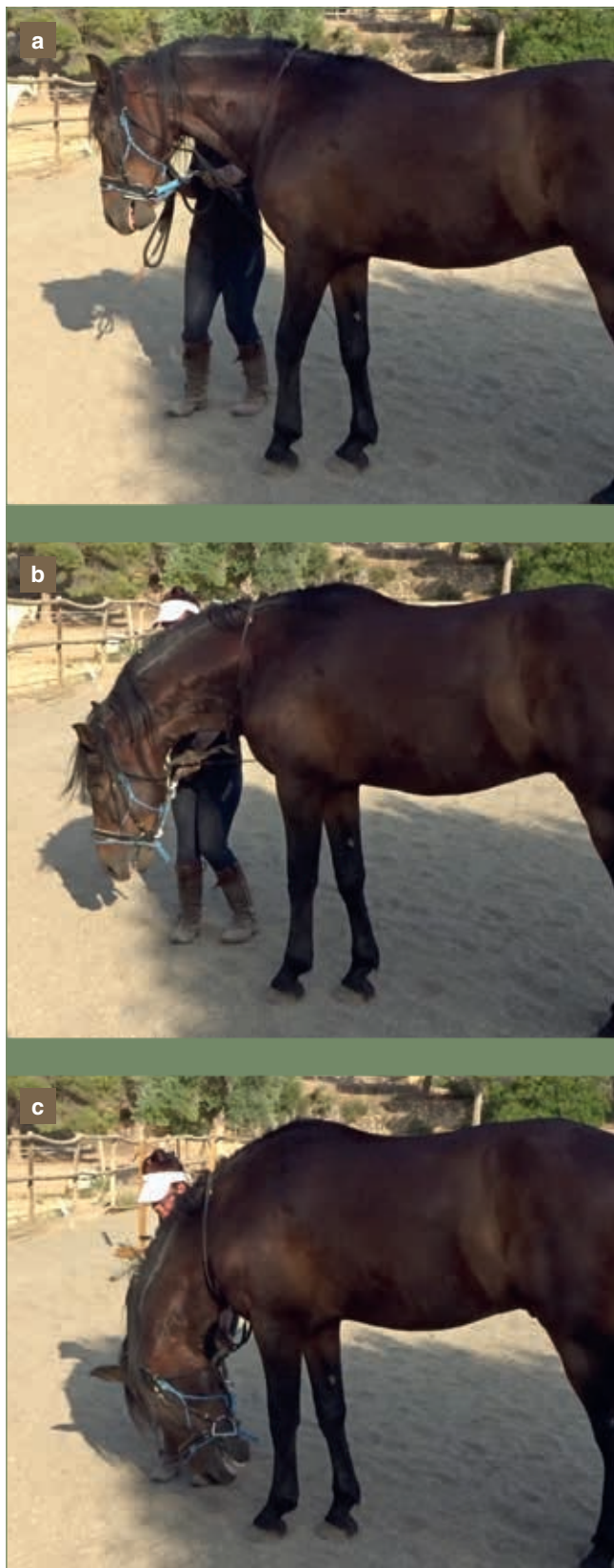


FIGURE 10. Reeving. When prompted to take a step back, *Helios* responds forcefully pushing his head downwards into the handler's hand in an attempt to free the reins.



FIGURE 11. *Helios* barging when requested to back up.



FIGURE 12. *Helios* moves his head to the left to block the handler's access to his left side.

INDIVIDUAL TENDENCIES

Helios has a tendency towards hyperreactivity. On the ground, his responses to pressure cues are not consolidated. He is not desensitised to some elements of the clinical environment, for example to clippers. However, desensitisation techniques cannot be applied until consolidation of pressure cues has been attained; otherwise, significant losses of stimulus control may occur.

BEHAVIOURAL MODIFICATION STRATEGY

The strategy includes retraining of behavioural responses (stop/back, go, over) to pressure cues using a gradual shaping technique until only light pressure is required to elicit each response. The methodology employed is as follows:

- Negative reinforcement: pressure delivered by lead rope, bridle/bit, hand and whip taps, alone or in combination, dependent on cue and what works best for *Helios* (benchmarking reduced arousal and a quick response to pressure cues) (Fig. 13).
- Positive reinforcement: tactile reinforcer and soothing voice, delivered after the performance of the correct behaviour (Fig. 14). This feedback further reinforces the performance of the target behaviour. Food rewards were not employed at this time in *Helios'* training because they exacerbated his nipping response.

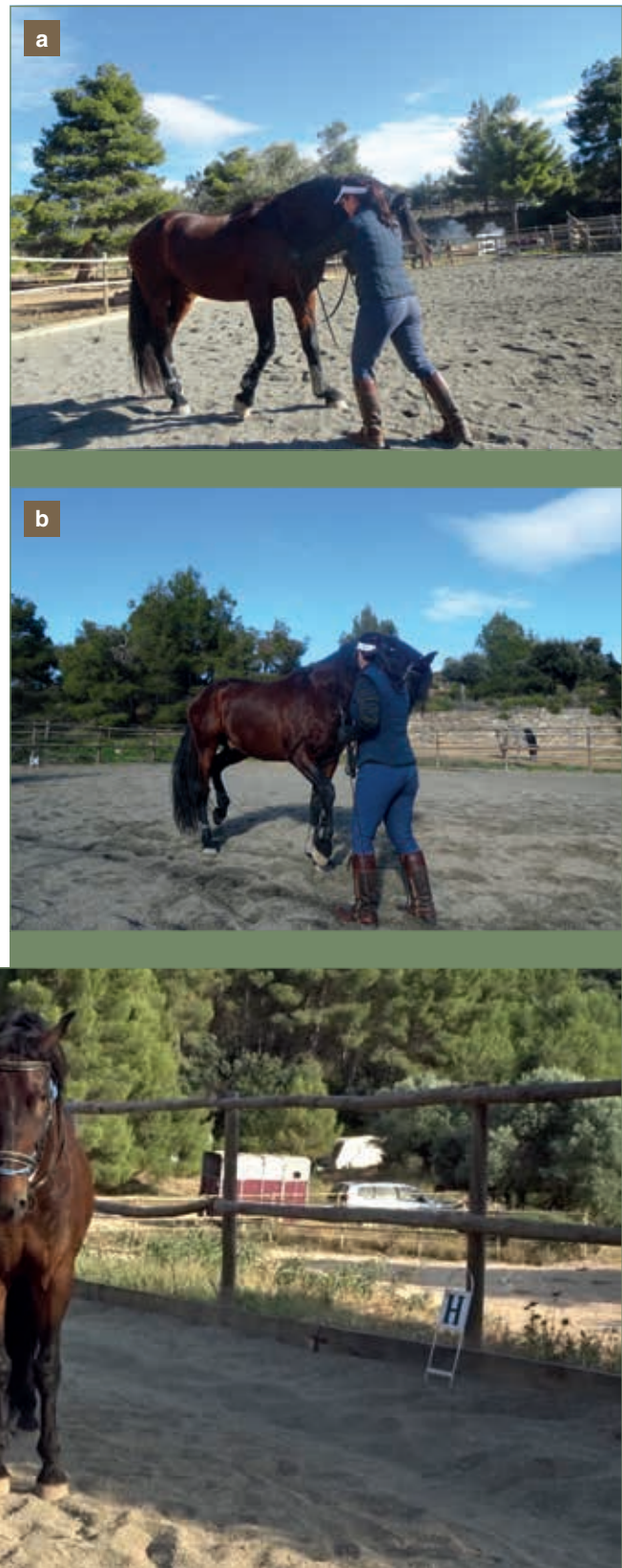


FIGURE 13. Different negative reinforcement tools and cues are employed to see which combination may be the most effective: bit pressure and hand pressure on his chest simultaneously (a), bit pressure alone (b) and whip taps on his chest together with bit pressure (c). The latter was the most effective method, requiring less overall pressure, and *Helios* was able to offer an immediate response.

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FIGURE 14. Tactile positive reinforcement aided in maintaining stimulus control throughout sessions by lessening arousal states and increasing trust.

Managing the levels of arousal is also part of the behavioural modification strategy.

- Initially, training in an environment that *Helios* perceives to be safe.

- Giving frequent breaks, especially after an improvement has been achieved. For *Helios*, it was sufficient to let him stand quietly for a few minutes. When immobility is difficult to attain, walking around in hand or on the lunge may suffice (Fig. 15).



FIGURE 15. Two ways to give a horse a couple of minutes break during sessions: quietly standing still (a) and calmly walking on the lunge (b).

SPECIFIC APPROACH TO REDUCE OR ERADICATE PROBLEMATIC BEHAVIOURS

- Reefing and head tossing: first, retrain and consolidate the step-back response, and then request it each time the horse reefs. Reward stimulating situations in which the horse does not reef with positive reinforcement; in *Helios'* case, this was “good boy” spoken in a soothing tone and a wither scratch.
- Nipping/pressing teeth into handlers' arm: as it is rewarding to the horse when the handler retreats under this kind of pressure, initially the author tends to use arm protection (see Video 1 in this chapter). This kind of protection limits injury to the handler and also can incur behavioural extinction, whereby the nipping response gradually fades away because the handler ceases to react and no longer reinforces the undesirable behaviour. A step back is introduced each time the horse's muzzle makes contact with the arm/arm protection. Eventually, with decreased levels of arousal and having been rewarded for each correct response, the nipping ceases.
- Reluctance to move, heavy and delayed responses: retrain and shape stop and go responses so that the horse responds from a light aid (Fig. 16).
- Barging: the stop and move shoulder over responses require consolidation prior to rehabilitating this issue. After this, these responses can be utilised to correct barging each time it occurs by initially halting his forward motion and then prompting the horse to move over (Fig. 17).
- Left side insecurity: desensitise the horse's left side to touch with your hand and other objects (e.g. whip, cloth) and also to sound (e.g. clippers). This subject is addressed more thoroughly in Chapter 11.



FIGURE 16. To make leading and general handling horses easier, it is essential to shape stop and go responses until they can be attained consistently from a light aid.



FIGURE 17. *Helios* now moves over from light whip taps to his shoulder; this cue can be used when he barges to move him away from the handler.



VIDEO 1. *Helios*, stimulus control.

In total three training sessions of around an hour each, including breaks, took place. Throughout, *Helios* was rewarded with tactile positive reinforcement and voice encouragement (“good boy”) after each correct response. On completion, he gained stimulus control from the handler and learnt to respond to light aids.

Video 1 summarises *Helios* case study as follows:

1. Reluctance to walk forwards on a slope. A motivating level of pressure is applied to the lead rope and only released when *Helios* takes a step forwards.
2. *Helios* demonstrates reeving and head tossing. A step back is requested to lessen the undesirable behaviour.
3. *Helios* is given a signal to trot on the lunge. Instead of trotting, he explodes forwards. This response is ameliorated by requesting a halt transition.
4. *Helios* is requested to stand immobile whilst being stroked. He accepts the handler on his right side but is reluctant to allow the handler to the left side (which is his blind side). A step back is elicited each time he breaks immobility.
5. Retraining starts. *Helios* checks out the arm protection prior to moving over from hand pressure applied to his shoulder.
6. The back-up response is becoming more established; *Helios* manages three consecutive correct responses. Light pressure is applied to the lead rope, with simultaneous gentle whip taps to his chest.
7. Forward, backward and halt transitions. Now much calmer, albeit *Helios* is still a little tempted to push into the handler's hand, but this is rapidly fading.
8. Immobility is more consolidated. *Helios* allows the handler access to his left side.
9. Leading him is no longer an issue.
10. *Helios* is now calmer and attentive on the lunge.
11. He is now sufficiently under stimulus control to attempt desensitisation to clippers.