Equine behaviour
Case studies

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Case Study One: Greta

- 14 year old Suffolk punch cross mare
- BIOP for 18 months (bought from dealer)
- Had shown increasing aggression towards people over that period, escalating in intensity and frequency over the last 3 months
- Full livery. Yard staff and owner unable to groom, place rug, enter stable by time of consultation
- Obese. Noted to be drinking large amounts.
Case Study One: Greta

Management at initial consultation:

*Stabled in 8 x 10 foot stable for 20 hours in every 24.
*Restricted hay and feed rations due to weight
*Bedded on shavings
*Turned out on own in electric fence pen for 4 hours daily. No food or grazing in pen.
*Ridden daily by owner but required tying up short to wall on yard for all grooming and tacking up.
Case Study One: Greta

Previous attempts to modify behaviour:

* Punishment for attempts to bite or kick (smacking, shouting, raising arm towards her head)

* Flooding by local trainer: tied up short to a fence, touched all over body while horse attempted to escape or use aggression to repel trainer. Bit trainer when she approached horse’s head so hit hard across her face.
Case Study One: Greta

Key concepts

*Fear – body language, behaviours, causes

*Stress – the effects of acute and chronic stress on fear and aggression

*Health – pain and disease could contribute to poor touch acceptance and to increased irritability
Causes of equine stress

- FRUSTRATION OF GOALS
- FEAR
- OVER EXCITEMENT / OVER STIMULATION
- PAIN / DISEASE
Stress: What is it?

Definition (Oxford English Dictionary):

1. Pressure or tension exerted on a material object
2. A state of mental, emotional or other, strain

Specific medical definition
Stress refers to the outcome of an interaction between an organism and the demands placed on it by the environment
Stress: What is it?

Physical stress vs psychological stress

Both ‘tax’ the bodies coping mechanisms by making the body work harder to stay in balance
Stress: What is it?

STRESSORS → Brain → Adrenal Gland → Kidney → STRESS CHEMICALS IN BRAIN AND BLOOD STREAM → STRESSORS
Corticotrophin Releasing Factor (CRF)

Adrenocorticotropic Hormone (ACTH)

Blood stream

Adrenal cortex

Cortisol

Negative feedback = switch off
Why stress matters in aggression

*Catecholamines
- In the brain: noradrenalin
dopamine
- In the blood: noradrenalin
adrenalin

*Glucocorticoids
- In the brain: CRH
- In the blood: cortisol

ACUTE STRESS

MOVE FAST
(fast reactions)

REFLEX REACTIONS
(limited conscious input)

CHRONIC STRESS

CHANGES IN SEROTONIN
(more irritable, increased
risk of reactivity)

CHANGES IN SUGAR
LEVELS
(more irritable)

POOR SLEEP QUALITY
(more irritable)

INHIBITION OF PFC INPUT
(reduced conscious input)
Hierarchy of aggression control
Chemicals that modify aggression

* Serotonin levels
* Catecholamine levels
* GABA vs glutamate activity
* Sugar levels
* Reproductive hormone levels – testosterone / progesterone / prolactin
Case Study One: Greta
Frustration of goals

- Inelastic behaviours
- Elastic behaviours
  (Marian Stamp Dawkins 1983)

*Safety
*Body Care
*Ingestion
*Sleep

Inelastic behaviours = frustration of goals
SAFETY

- Good bonds: attachment and socialisation history
- Stable, predictable social group
- Ability to use flight to avoid potential threats at all times
- Well habituated to environment
- Minimal experience of punishers / other fear inducing encounters
Eating and drinking

- Grazers – minimum 14 hours daily
- Eat and move
- Social eating
- Browsing comprises up to 10% diet
- Social drinking – in open spaces
Body Care

- Elimination (urination / defaecation)
- Temperature regulation
  (freedom to move to generate heat, freedom to seek shade, roll to cool)
- Coat care
SLEEP

- Horses rest up to 4 hours daily (inelastic behaviour)
- Sleep occurs within rest periods and in total accounts for less than 2 hours in every 24
- Social- sentenals
- Polyphasic (taken in small snatches throughout the 24 hour period)
- Approx 30 minutes REM sleep daily – must lay flat out
Signs of poor sleep

* Hypervigilance (including pacing, increased flight responses, over reactivity to sound/novelty)
* Irritability / aggression
* Poor touch acceptance
* Exaggerated response to pain / discomfort
* Poor concentration / reduced learning capacity
* Reduced immunity

Ref: Kamphuis et al (2012) Poor sleep as a potential causal factor in aggression and violence Sleep Medicine 13 no4 (327-334)
Case Study One: Greta Disease

Excessive drinking
*PPID (Cushings)
*Renal disease
*Diabetes (insipidus / mellitus)

Exaggerated response to touch
*Pain (eg arthritis / stomach ulcers)
*Skin disease

Psychological
*Psychogenic polydipsia
Case Study One: Greta

Environment modification

Remove frustration of goals

* Allow freedom of movement
* Social contact
* Allow eat from ground and move
* Allow some browsing / variety
* Sleep

Remove fear

* Allow choices
* Allow space to move away from potential threats
* Stop rugging
* Stop grooming
* Stop tying up

‘Remove’ disease if present
Case Study One: Greta

Stress reduction – how long?

Begin reward based training to rebuild confidence. Initially avoid retraining around actual triggers (eg grooming / rugging)

Counter conditioning programme for actual triggers
Case Study Two: Harry

- 3 year old cob x gelding
- BIOP for 2 years (bought from breeder)
- Was pulling owner over when being led to field. If owner attempted ‘corrections’ Harry was rearing up and pulling away.
- Small private yard rented by the client for 4 horses all of her own.
- Had been stabled a lot over the previous few months due to poor winter weather. Horses now being turned out in new grassy paddock daily and stabled over night.
Case Study Two: Harry

- Owner had to walk the horses down a private drive with grass on both sides then turn into an open field which she had to walk part way across to reach the paddock securely fenced for the horses. This could not be changed.
- The owner had been turning the other 3 horses out first so she had two hands available for leading Harry.
- She would then lunge Harry to ‘tire him’ for 10-15 minutes prior to leading him out to the field.
- She was resorting to leading Harry in a Chiffney but now he was starting to rear up and strike out as soon as she led him out of the stable.
Case Study Two: Harry

Key concepts

* Adrenalisation
* Rebound behaviours
* Long term potentiation
Adrenalisation

*Increased arousal chemicals in the brain and body

This can be part of the undesirable process of ‘trigger stacking’ or sensitisation

‘ADRENALISED: activities or events that frighten or thrill with the result an elevation in adrenalin’

Adrenalin – speeds reflex actions (react faster, react ‘harder’)
- moves animals higher up the ‘fear/ frustration ladder’

Prevent adrenalisation – avoid leaving Harry by himself prior to leading
- avoid Harry having to watch other horses (his companions) being led out of the yard
- avoid other causes of fear / frustration and fast exercise prior to turnout
Rebound behaviours

When thwarted from undertaking essential behaviours for significant portions of time, an animal will often undertake more of that behaviour (increased frequency and intensity) when the opportunity arises.

Horses that have been confined, including over night in a stable, have been shown to have an increased desire to move more and faster.

Ref Freire R et al Effects of different forms of exercise on post inhibitory rebound and unwanted behaviour in stabled horses EVJ 41(5)
Resolving rebound in Harry

*Address frustration of goals as per case study one particularly in relation to locomotor options (eat and move, play, investigate etc)

Options:
Allow turnout in arena with a companion for at least half an hour before leading to the field

Create a pen attached to his stable for greater freedom of movement

Owner elected: stop stabling Harry at night and allow him to stay in arena instead.
Avoiding long term potentiation

PRACTICE MAKES PERMANENT!

Pathways grown stronger through repeated use

Pathways grow weaker without use

The path of least resistance – we take the ‘well trodden’ path

A key concept in many behaviour problem resolutions is to provide a period of time without any ‘practice’ of the unwanted behaviour, and to being ‘practicing’ the desired alternative.
The use of ‘station training’ or ‘target’ training to teach calm leading

*Set up ‘stations’ – rubber feed bowls, weighted sheet on ground, cardboard toy box, log – several of these spaced approx. 10 metres apart, that contain small amounts of food / pastes

*Use these stations so that the horse walks from one to another and can stop, lower head, and consume treats, before being asked to walk on directly towards the next station

*Ideally walk on headcollar, in the presence of another calm individual
The use of ‘station training’ or ‘target’ training to teach calm leading

*Use target stick training to reward the horse for walking calmly with a slightly lowered head position. Reward the horse for touching the target every several walk strides.

*Practice stopping intermittently for rewards from the ground to maintain the total calmness
Phasing out stations or the target stick

*Once calm walking to the paddock has been practised on multiple occasions, we can start to reduce the number of stations and increase the distance between those remaining. We can add in rewards for calm walking in between the stations either from our hand, or taken off the ground.

*For target stick use we can ask the horse to walk for longer between presentations of the stick for touching.

*Put slow walking or stopping to search on ‘cue’ and reward from hand or ground for the behaviour
Case Study Three: Liberty

- 10 year old Thoroughbred cross gelding
- BIOP for 12 month
- Had always been extremely ‘flighty’ and reactive. Owner had spent the first 3 months doing nothing with the horse, allowing him to settle with a quiet group of horses
- For the last 9 months the owner had used a pressure release training system to reintroduce him to handling and being ridden.
- Reactivity to stimuli including saddle placement was still high and the horse considered very difficult to handle predominantly flighty, occasional aggression.
Case Study Three: Liberty

- Horse lived out 24/7 on grass, with access to two large shelters and trees and hedges as natural shelter.
- DIY livery basis so mostly only handled by the owner.
- Vet check when owner took on horse had been very difficult but had not found any obvious abnormalities.
- Vet check at time of behaviour consultation found back pain.
- Radiographs of the horse’s back showed several sites of ‘impinging / overidding dorsal spinous processes’ or ‘kissing spines’
Case Study Three

Key concepts

*Pain

*Conditioned emotional reactions to certain pain predicting stimuli.
Case Study Three: Liberty

- Ultimately, Liberty had surgery on his back to cut the supraspinous ligaments between the ‘kissing spines’.

- Post surgical management was done in a small paddock with a padded dressing and lightweight rug to cover the surgical site.
Case Study Three

- Significant change in behaviour by 2 week post op check to remove skin stitches.

Lopes Fagundes, Hewison, McPeake, Zulch and Mills (2018)
Noise sensitivities in Dogs: an exploration of signs in dogs with and without musculoskeletal pain
Frontiers in Vet Sci 5, 17
Case Study Three

- Significant change in behaviour by 2 week post op check to remove skin stitches.

- Grazing, scatter feeding and browsing allowed for normal stretching opportunities post op.

- 3 month rehabilitation programme using station training and target stick training to get the horse in active walking, stretching his back. Building to trot in hand with owner.

- Counter conditioning programme for saddle placement, beginning with the horse touching a target for reward, near the saddle cloth, later the saddle, having small cloths placed on his back, surcingle, pad on back, saddle cloth, then saddle.
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