

Seventy Reasons for Not Using a Bit

by Robert Cook¹



Various modes of forming that which all men speak of with admiration, as 'A good mouth.'
[From 'The Illustrated Horse Doctor,' written and illustrated by Edward Mayhew MRCVS (1890)]

“Sixty-five of 66 horses exhibited numerous signs of pain caused by the bit.”

This sentence encapsulates the findings of a recently published study 'Behavioural assessment of pain in 66 horses, with and without a bit.' (Cook and Kibler, 2018 <https://doi.org/10.1111/eve.12916> [doi: 10.1111/eve.12916]). Removal of the bit revealed it had been causing pain. Below is a summary of the article.

Horses can be ridden with or without a bit. Comparing the behavior of the same horse in these two modes made for a 'natural experiment.' Sixty-six riders who switched their horse from bit to bit-free completed a behavior-based questionnaire before and after the switch. The number of behaviors shown by each horse, first bitted and then bit-free, was counted and compared. Sixty-nine behaviors were identified as being caused by bit pain. After mostly multiple years of bit usage, the time that horses had been bit-free before being assessed a second time was just over a month (35 days; with a range from 1-1095 days). The number of bit-pain signs exhibited by each horse when bitted ranged from 5-51, with a median of 23; when bit-free the number ranged from 0-16 with a median of 2. The number of behavioral signs of pain for the total population when bitted was 1575 and bit-free 208; an 87% reduction within a nomi-

nal month. The term 'bit lameness' was proposed to describe a syndrome of ridden-horse lameness identified by using up to 69 signs of bit-induced pain. Only one horse showed no reduction in behaviors related to pain when bit-free. By removing the bit, the welfare of 65 out of 66 horses was enhanced and the risk of bit-related accidents minimized. Evidence is advanced for identifying aversion to the bit as a manifestation of behavior inherent to the horse as a species.

The purpose of this article is to introduce the study to owners, riders and administrators in the horse industry.

Though bits have been used for 5000 years, the first data on bits was not published until quite recently (Cook and Mills 2009). During a video-filmed demonstration at the 2008 Annual Conference of the Certified Horsemanship Association, four riding school horses that had been bitted all their lives were switched from bit to bit-free. The riders' concurrent four-minute performances, first bitted then bit-free, were scored by an independent judge. Scores increased from an average of 37 ('fairly bad') when bitted, to 64 ('satisfactory') when bit-free just a few minutes later.

The present investigation was a long-term study of a larger number of horses and focused on pain rather than performance. A question-

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naire² sought answers to the following questions:

1. What behaviors are caused by the bit? [Answer: 69 behaviors were identified (see Table 1).]
2. How common are they? [Answer: Very.]
3. How many bit-induced behaviors might a horse exhibit? [Answer: In this population, from 5 to 51 'unwanted' behaviors, with an average of 23 per horse.]
4. Are they reversible when the bit is removed? [Answer: In 65 of the 66 horses they were **significantly** (i.e., statistically) reversible.]
5. Is a horse's welfare improved by removal of the bit? [Answer: Yes. All but one horse exhibited improved welfare.]
6. Can a horse be controlled without a bit? [Answer: Yes. 'Lack of control' was the fourth most common behavior when bitted. When bit-free, the number of riders reporting this particular problem was reduced by 86%. A reduction in the prevalence of 69 'unwanted' behaviors reduced the risk of accidents and increased safety.]

² Available online at <https://bitlessbridle.com/FOTB-Q.pdf>

All riders rode 'English' style. Horse age ranged from 3-24, with an average of 10 years. Breeds varied, as did their predominant disciplines. None of the horses were racehorses. The study population was not a random population.

Tellingly, the behavioral signs eliminated or reduced by removing the bit were all too familiar to riders (Table 1). The descriptive names for these unwanted behaviors were part of everyday equestrian language. All 69 signs were manifestations of five subsets of fear (i.e., pain-actual or pain-anticipated); fright, flight, fight, freeze, and facial neuralgia. In hindsight, they were also manifestations of a feature common to many so-called 'primitive' animals. Essentially, like amoeba and other simple life-forms, horses move away from or towards solid objects. The word for this deeply embedded survival phenomenon is *stereotaxis* [Gk: *stereo*, 'solid' and *taxis*, 'movement']. Undeniably, a bit is a 'solid object.'

Biologists refer to negative and positive stereotaxis and, unsurprisingly, horses in the wild exhibit both modes. They move away from predators (negative stereotaxis) and move towards food and water (positive stereotaxis). But the horse's dilemma when faced with a bit is that it can neither avoid nor engulf it. Because the bit is strapped into its mouth it can neither be spat out nor swallowed.

Behavioral signs of bit pain are either general signs of discomfort (e.g., chewing on the bit, tail swishing, fidgeting, jiggling, 'arguing') or desperate and mostly foiled attempts to move away from the bit (e.g., by opening the mouth, tossing or tilting the head, pig rooting, bucking, rearing or bolting). If unable or disinclined to distance itself from the bit by dislodging the rider (could shying be a learned strategy?) a horse will defend itself from the bit in a variety of ways.

These include grabbing the bit between the first cheek teeth, pinning the bit under the tongue, or placing it against the front edge of the lower first cheek teeth where it causes less pain – so called 'pulling' on the bit. Collectively, bit-pain behaviors are stereotypical behaviors; the "responses of normal animals to abnormal environments." We have thought until now of stereotypies as being problems of the stabled horse, like crib-biting and weaving. This limitation appears to be incorrect. Stereotypies, defined as "repetitive behaviours induced by frustration (and) repeated attempts to cope" were very common in a sample of 65 ridden horses. That the population was not a random sample is of no consequence in view of the evolutionary basis of equine stereotaxis.

Gum is periosteum - the 'skin' of the bone and its most sensitive part (think 'sore shin'). A bit pressing on the bars of the mouth is pressing on bone. A bit pinching the tongue between metal and bone is no better, as the tongue itself is a sense organ. Finally, a bit stretching the lips (in racehorses to twice their resting length) is stretching the most sensitive region of another sense organ, skin. Think 'agony-in-the-dentist's-chair' when even only one corner of your mouth is maximally retracted.

It follows that expecting a horse to 'accept the bit' is unrealistic. Aversion to a piece of metal in the mouth is a natural instinct 'hard-wired' into every horse. The acid-test that any rider must complete before claiming that their horse 'accepts' the bit is to demonstrate to independent and qualified witnesses that their horse shows no improvement in behavior when the bit is removed. Bit-induced 'learned helplessness' is resignation, not acceptance.

Current animal welfare thinking supports the concept that animals experience both negative and positive emotions – pain and pleasure (Mellor and Beausoleil, 2017). Happily, as an old song urges, removing the bit 'accentuates the positive.' The final column of Table 1 lists the pleasurable experiences that horses appear to enjoy when bit-free.

I predict that studies on racehorses will reveal many more signs of bit-induced pain. It is my opinion, for example, that by breaking the lip seal and allowing air into the back of the mouth, bit-induced soft palate instability may lead to a cascade of poor performance, asphyxia, falls, dislocations, fractures, 'bleeding,' and sudden death.

A bitted rein, under tension, can harm an exercising horse in (at least) three ways. It can do this directly by causing pain, as exemplified by this study. Indirectly, a bitted rein also imperils a horse's basic need for freedom to move its head. With poll flexion (not even hyperflexion/Rollkur), the airway is obstructed, the work of breathing is increased, chest pain may occur and premature fatigue can follow. The same effects can follow from rein tension limiting the natural swing of the head/neck pendulum at the canter or gallop. The 'head-bob' is a vital energy-saving mechanism for both breathing and striding. Finally, and also indirectly, the bit can cause asphyxia by breaking the lip seal. With air in the mouth and back of throat, the soft palate is no longer sucked down onto the root of the tongue and a running horse can be suffocated, with disastrous consequences,

i.e., waterlogging of the lung ('bleeding') and sudden death.

A bit in the mouth prevents a horse from breathing freely. Like the rabbit, a horse is a 'nose breather.' A bit triggers digestive system reflexes (e.g., salivation and swallowing) when what an exercising horse needs is an exclusive focus on respiratory system reflexes. Thus, a bitted horse is physiologically handicapped by being expected to simultaneously 'eat' and exercise.

Last year, a magisterial review and synthesis of ridden-horse welfare was published, with a focus on breathing, breathlessness and bridles (Mellor and Beausoleil 2017). Now, with observations on pain as a cause of incoordination, imbalance and gait abnormalities ('bit lameness'), another piece of the puzzle has been added. Readers might question why it is that only 69 signs of bit pain are listed, yet this article's title refers to 70 reasons for not using a bit. With tongue in cheek, my not so 'lame' excuse is that the 70th reason is stereotaxis.

It appears that a pain in the mouth can change the whole of a horse's 'body language.' The behavioral changes were expressed in one or more parts of the body; head, neck, back, limbs and tail. With one exception ('excess salivation'), all the bit-induced behaviors identified in this study were signaled by abnormal behaviors expressed through the musculoskeletal system, i.e., by abnormal movement. Bit-pain lead to impediments in the gait. It rendered 65 horses apparently 'unsound of limb' when, in fact, the problem was a pain in the mouth.

Collectively, the behaviors were manifestations of musculoskeletal pain, expressed by abnormal movements of the head, spine and limbs. They ranged from too little movement (e.g., stiffening, freezing) to too much movement (e.g., bucking, bolting). That horses may exhibit a few aversions to the bit is well accepted. That aversion is ubiquitous is not. The study showed that 65 of 66 horses exhibited demonstrable aversion to the bit and that horses have not less than 69 ways of exhibiting frustration, attempts to cope and efforts to avoid bit contact. The one horse that showed no improvement following removal of the bit (a persistent 'headshaker') may have been suffering from an especially persistent form of bit-induced facial neuralgia.

A conclusion of the study was to propose 'bit lameness' as a collective term for 68 bit-induced behaviors. Such a term is more specific than 'bridle lameness' and is readily tested. Removal of the bit is recommended at an early stage in the work-up of any ridden lameness of unknown origin.

Administrators, judges, instructors and riders need to recognize that a horse is programed by evolution to evade the bit. A bitted horse should not be blamed for such behavior. A rider who tries to prevent a bitted horse from opening its mouth by using a crank noseband is using a misguided and ethically unacceptable approach. It would be appropriate for competition stewards to require such devices to be removed before a horse enters the ring. One fine day, bits themselves may well be banned.

Thus, over the last 20 years, the evidence indicting the bit has become increasingly compelling. Apart from this study and other fact-based studies, the evidence has been 'field-tested' and endorsed by a rising swell of bit-free riders worldwide who previously used bits and have now eschewed them. Crucially, after two decades, no evidence has been published to refute the statement that an oral foreign body is

physiologically contraindicated (Cook 1998). There is no evidence to justify the mandatory use of the bit in any discipline. The bit is an obsolete legacy of a period in history when the horse was a weapon of war. 'Pleasure' riders can already choose to relegate their bits to collections of bygone artifacts. Competition riders may wish to reconsider whether to continue competing while mandatory-bit rules remain in force.

A deficit in the husbandry of captive animals has been defined as "something that the animal would change if it could (e.g. a motivational deficit linked with frustration; a health deficit linked with nausea or pain; or a safety deficit causing fear)." For 65 of 66 horses, the bit was a definite deficit. The horses were happier (pain-free) when bit-free and the rider safer. Performance was not assessed but it can be inferred that prevention of pain promoted performance. 🐾

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Order when bitten	PAIN INDICES	number of horses affected BITTED	number of horses affected BIT-FREE	reduction when bit-free (%)	Inferred likelihood of horse experiencing PLEASURE (Positive affective experiences) e.g., pleasures of safety, confidence, comfort, compliance, enthusiasm, motivation following removal of the bit and cessation or easement of pain
1	Hates the bit	53	0	100	The relief, pleasure and comfort of being without pain
2	FRIGHT:	46	4	87	One of the five major categories of fear (the five 'F's), replaced by calmness, ease and comfort
3	Stiff-necked	45	7	84	Freedom of the head: Ability to balance; smoothness and fluidity in the 'way of going'
4	Lack of control	43	6	86	horse/rider high accident hazard replaced by willing cooperation, harmony and partnership
5=	Resents bridling	41	3	93	Drops head eagerly into bridle; exhibits enthusiasm for work
5=	Above the bit	41	3	93	Able to select the physiologically most comfortable (optimally balanced) head position
6	Muzzle rubbing	40	9	77	Relief from the persistent irritation and distraction of facial neuralgia
7=	Head shaking	37	8	78	As above for 'muzzle rubbing' - the relief from nerve ache
7=	Unfocussed	37	1	97	Focused; not distracted; 'listens' to and complies with rider's signals
8	FLIGHT	35	1	97	Contentment; energy conservation; no propensity to bolt, rush or run away
9=	FIGHT	34	2	94	Calm, quiet, cooperative and willingly offers compliance
9=	Pig-rooting	34	2	94	See 'fight' above: Does not grab the bit and snatch reins from rider's hands
10	Difficult to steer	33	8	76	Ability to balance; steers straight and turns comfortably (also see 'lack of control' above)
11=	Stiff or choppy stride	32	2	94	Enjoys the natural rhythm of motion (also see 'stiff-necked' above)
11=	Reluctant to rein-back	32	10	69	Return of normal agility; one of many signs of reduced 'bit lameness'
12	Tail swishing	31	1	97	Removal of discomfort; tail movement in synchrony with spinal movement
13=	Hair-trigger response to bit	29	0	100	Calm and confident as opposed to 'highly strung,' anxious and apprehensive
13=	Sneezing & snorting	29	13	55	Restoration of normal breathing pattern; reduction of nasal irritation (facial neuralgia)
14	Yawning	28	4	86	Absence of yawning suggestive of reduced need to ease/interrupt pain signals (see facial neuralgia above)
15	Slow learner	27	1	96	Return of ability to learn - a vital survival strategy (see unfocussed above)
15	Uncooperative	27	3	89	See 'fight' above
15	Heavy on the forehead	27	6	78	Unhampered ability to balance, return of normal agility, elimination of stress and pain
16	Fails to stand still	26	0	100	Return of species specific default behaviour of calmness and contentedness
17	Pulling on bit	26	0	100	No need to defend itself from the bit and become unbalanced in the process
18=	Grazing on the fly at exercise	25	11	56	Less need to 'interrupt' pain signals (see 'yawning' above)
18=	Inverted frame	25	5	80	No pain - no high head carriage - return of ability to balance
19=	Dislikes wind/rain/sunlight	24	10	58	Relief from trigeminal hypersensitivity
19=	Tilts head at exercise	24	5	79	Proper balance with no need to try and avoid bit pain
19=	Fails to maintain trot or canter	24	4	83	Engaged, lively, energised, exhibits vitality of fitness
20=	Difficult to mount	23	3	87	Reduced anxiety and apprehension
20=	Grabs the bit	23	0	100	No need for defensive behaviour at exercise
20=	Lacks courage	23	5	78	Confident, engaged and curious about its environment
21=	Napping	22	4	82	Reduction of fear; reduced pain increases comfort (see 'freeze')
21=	Stumbling	22	7	68	Reduction of 'bit lameness' with unfettered proprioception enabling a horse to keep itself upright and safe
22=	FREEZE	21	4	81	Keen to explore. Relief from the 'frozen' state of a prey animal when attacked by a predator
22=	Resents unbridling	21	1	95	Optimism rather than pessimism (see 'hates the bit' above)
22=	Behind the bit	21	1	95	Adopts head position based on proprioceptive signals (see 'above the bit')
22=	Head shyness	21	12	43	Abatement of trigeminal hypersensitivity, hyperalgesia or neuralgia
22=	Salivates excessively	21	2	90	A relatively dry mouth betokens contentedness at exercise
23=	Bucking or bounding	20	3	85	Less pain, more comfort
23=	Lazy or dull	20	4	80	Engaged aliveness
23=	Heads for the stable	20	6	70	Relishes exercise, fulfils biological drive and need for movement
23=	Jigging	20	1	95	Walks quietly and contentedly
24=	Unfriendly in stable	18	2	89	Return of normal (social) behaviour
24=	Anxious eye	18	2	89	'Soft' (rounded) eye - an indicator of comfort
25=	Ear pinning at exercise	17	4	76	Non-aggression equates with the default social behaviour of the species
25=	Open mouth (gaping)	17	2	88	Closed mouth and sealed lips; oral vacuum restored; default condition for unobstructed airway at exercise
25=	Lolling tongue	17	0	100	Another return to physiological and behavioural norm
25=	Reluctant to change lead	17	5	71	Return of normal agility with correction of 'bit lameness'
26	Bites at tack or other horses	16	0	100	Reduced facial neuralgia enables disposition to move beyond neutral to a more positive emotional state
27	Scuffs hind hooves	15	7	53	Soundness of limb returns with correction of 'bit lameness'
28	Backing-up	14	1	93	See 'fails to stand still'
29	Multiple wrinkles around muzzle	13	2	85	Relaxation of tension with elimination of pain
30	Crossing the jaw	13	1	92	As above - return to 'normal' behaviour when on the move
31=	Evades capture in paddock	12	2	83	Accepts rider as a member of its 'herd' or 'band'
31=	Sweats excessively	12	1	92	No stress, less sweat
31=	Over bends	12	0	100	Proprioceptively and physiologically comfortable head position
31=	Tongue over bit	12	0	100	No need for defensive behaviour following removal of the bit, unobstructed breathing
31=	Interfering	12	4	67	Another aspect of 'bit lameness' corrected
32	Rears	11	2	82	Reduction of bit-escape behaviour
33=	Runs wild on bitted lunge	10	1	90	More comfortable
33=	Lower lip slapping	10	3	70	More comfortable
33=	Incoordination.	10	1	90	Unhampered proprioception corrects 'bit lameness'
34=	Eyes water	9	2	78	Reduction of corneal pain (facial neuralgia)
34=	Exercise triggers cough	9	2	78	Reduction of pharyngeal angina (trigeminal neuralgia) and/or inflammatory airway disease
34=	Back problems	9	2	78	Relief of 'bit-lameness'
35	Retracts tongue behind bit	7	0	100	Return of default tongue position at exercise, oral vacuum, soft palate stability, unobstructed airway
36	Drops food	6	0	100	Elimination of 'sore mouth' (mandibular gingivitis)
37	Reluctant to drink during 'endurance' test	4	0	100	Ability to create an oral vacuum and relief of 'sore mouth' prevents dehydration

Table 1: Prevalence of 69 bit-pain indices in 66 horses, when bitted and bit-free. The mean reduction of indices when bit-free was 85% (range 43 to 100) with a median of 87%. Many of the bit-pain behaviors jeopardized the safety of both horse and rider. All were 'unwanted' behaviors.

Key: Upper case letters mark four of the five major categories of fear-induced behaviour (the five 'F's) in the questionnaire; i.e., fright, flight, fight, freeze, and facial (trigeminal) neuralgia. Pain indices exclusive to the bit are shaded grey.