Registered Association of Veterinarians for Animal Protection (Tierärztliche Vereinigung für Tierschutz e.V., TVT)

Research group 11, Horses

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April 25, 2005

Expert opinion regarding rodeo events in the Federal Republic of Germany from a legal[1], ethological and ethical perspective

Introduction

Rodeo events have been subject to public criticism for many years. So far, however, the supervisory authorities have hardly been able to evaluate the disciplines presented from a legal point of view, as there have been no scientific publications regarding the animal protection relevance of rodeo.

In 2003, at the instigation of “anticorrida“, an animal rights organisation, the research group “horses“ at the Association of Veterinarians for Animal Protection (TVT) did research into this subject and developed the present expert opinion on rodeo events. In order to be able to do so, several rodeo events were attended and extensive video documentation of rodeo events that took place in Germany in 2003 and 2004 was analysed[2]. The evaluation was based on aspects of animal protection, ethology and ethics.

[1] The term “legal” henceforth will refer to the German animal protection law
[2] 2003:Werlte, Hilter, Berlin, Pullman City (Egging u. Hasselfelde),
2004: Speyer, Neu Ulm, Seelitz, Osterscheps, Walldorf, Münchehof, Hilter

Legal rating of rodeo events

Like circus events, rodeo is an activity under paragraph 3 no. 6 Animal Protection Law (Tierschutzgesetz, TierSchG[3]) (filming, exhibition or similar events; HIRT / MAISACK / MORITZ, 2003). For this reason, it is mandatory for rodeo events to obtain permission under paragraph 11 TierSchG, as anyone intending to exhibit animals (or provide animals for such purposes) requires permission by the authorities in charge (paragraph 11 section 1 no.3 d TierschG). Within the scope of such events, the infliction of any kind of pain, suffering or harm is prohibited as it constitutes a breach of regulations with a fine of up to € 25,000.00 (paragraph 3 section 6 in conjunction with paragraph 18 section 1 no. 4 and paragraph 18 section 3 TierSchG). In this context it is irrelevant whether the stress inflicted is substantial or unsubstantial. Unfortunately, many an authority and even prosecutor's office is wrong in believing that pain and suffering are only legally relevant, if their substantiality can be proven. However, this ignores the fact that the substantiality aspect is only relevant, if a criminal act under paragraph 17 no. 2 b TierSchG is to be confirmed. Yet the criteria for a breach of regulations under paragraph 18 section 1 no. 4 in conjunction with paragraph 3 no. 6 TierSchG are already fulfilled, if the animals are exposed to any kind of pain, suffering or harm, while it is irrelevant if the stress is substantial or not. In addition, in this case – in contrast to the facts constituting an offence under paragraph 17 no. 2 b TierSchG, which always presupposes intent – careless action is sufficient.

The rodeo disciplines

Bare Back Riding requires the cowboy to remain seated on a bucking horse for 8 seconds. He may secure his position only by holding on to a strap with one hand. A saddle is not used here.

Saddle Bronc Riding is similar, although here a western saddle is used instead of a strap, and the rider holds on to a rope tied to the horse's halter.

In Bullriding, adult bulls are used that have a rope belted around their chest which the cowboy can grip until he's thrown off.

The Wild Horse Race is a team event with 3 cowboys trying to put a strap on a horse for the cowboy to hold on to, have one cowboy mount the horse and cover a certain distance. The time allowed for this is 90 seconds.

In Break Away Roping, a cowboy on horseback tries to rope a calf. If he succeeds in doing so, the horse will abruptly stop. The calf races on and a piece of cord attached

[3] TierSchG = Tierschutzgesetz = the German animal protection law

between lasso and saddle tears so as to prevent the calf from being strangled. This toned down form of “calf roping“ could be seen at all the events evaluated.

Other disciplines that are described in rodeo-related contexts are “Steer Wrestling“ (wrestling a steer to the ground), “Team-Roping“ (tying up calves), to make the animals fall by “Tripping“, “Wild Cow Milking“ (the forced milking of cows), “Mutton Bustin“ (riding of sheep) and Piglet Chase for children. To our best knowledge, these disciplines, except for “Wild Cow Milking“ and Piglet Chase, have not taken place in Germany in recent years.

Apart from the “classic” disciplines, rodeo also includes presentations that are common at western riding events, such as the “Barrel Race“ (a horse raced around barrels), “Pole Bending“ (zigzagging around poles), “Cutting“ (isolating cattle from the herd). These disciplines are not currently under criticism.

In the following, especially the disciplines that involve the “flank strap“, which has been heavily criticised for a long time will be looked at. These events are “Bare Back Riding“, “Saddle Bronc Riding“ and “Bull Riding“.

Use of the flank strap

In “Bare Back Riding“ and “Saddle Bronc Riding“, a so-called flank strap is used. A flank strap is a strap that is placed in the flank strap area. Contrary to popular opinion, this does not seem to squeeze the horse’s genitals. But this is not really necessary as the flank strap is placed in an area of high skin sensitivity which is sufficient for the intended purpose. Depending on the horse’s defence behaviour in the chute, the flank strap is put on more or less loosely. When the horse is released from the chute, the flank strap end is held on to as long as possible for maximum tightening. This renders previous controls for a loose fit of the flank strap meaningless. After the stipulated 8 seconds the flank strap has to be loosened manually in the show arena by the assisting cowboys. The use of mechanisms to automatically unfasten the flank strap could not be observed. The protective lining of the flank strap in the horse’s abdominal area does not have a weakening effect on the horse’s reaction. At best, it may prevent injuries that become visible at a later point in time.

In the so-called “breaking in“ of wild horses, the rider or, respectively, his weight, to which the horse is unaccustomed, has to be seen as the cause for its defensive reactions. In rodeo, the flank strap has to be considered as the real reason for the horse’s bucking and kicking. The flank strap was used on all the horses observed and the horses only stopped bucking when the flank strap was removed – not when the rider was thrown off. As the intensity of the horses’s bucking reaction varied, it is safe to assume that conditioning also takes effect; this will be discussed further below. Some animals showed extreme defence reactions in the chute, such as kicking, rearing up

and throwing off the rider at the point of or immediately after putting on the flank strap. In the arena the animals used different coping strategies. For example, galloping away in flight, extreme bucking, kicking, or combinations of these behaviours could be observed. In addition, many horses showed stressed facial expressions (extended upper lip, widened nostrils, lips drawn back, tail squeezed in, tensed muzzle, which suggest a negative emotional condition (ZEITLER-FEICHT, 2001). Horses with a wide-open mouth were also observed, which has to be attributed to the described stressed facial expressions. From an animal protection point of view, the flank strap has to be seen as a cause of suffering (stress, anxiety, fear) and as a potential cause of pain.

The horse's bucking

It is generally known that skin – and not only that of horses – is differently structured in the various areas of the body (NICKEL et al., 1996). In general, a horse's skin is not as thick as that of a cow; highly-bred and younger animals have a thinner skin than older ones, and those areas of the body that are more protected (abdominal area and the area between the thighs) have even thinner skin than the other areas (ibid.). As a rule, slightly hairy or smooth areas of skin, such as the teats and preputional area are more heavily innervated and, consequently, more sensitive than hairier areas (ibid.). In addition, mares, especially when they are in heat, are more sensitive in their flank strap areas; also differences between the various breeds are known ("thin-skinned thoroughbreds").

Bucking is part of a horse's normal set of behaviours, for example during play, for relaxing muscles or when expressing high spirits or joy. This form of bucking usually takes place in prolonged galloping. On occasion, horses lash out with their hind legs. When they do so, relaxed facial expressions can always be observed.

Bucking is also a form of behaviour that is typical of the species in cases when fending off beasts of prey or escaping as well as with some forms of interaction characteristic for the species (defensive aggression = defence). In this case, bucking is an active coping strategy in negative emotional conditions and is accompanied by frequent bucking. Anxiety, fear and/or pain have to be seen as the causes for bucking and kicking.

"Anxiety" and "fear" are described as negative emotions accompanied by individual stress reactions, for example when becoming aware of danger or threat. Emotions are described as psychological reactions of an organism to external stimuli, based on the congenital or acquired evaluation of a situation. Controlled reactions are associated with "fear", whereas spontaneous and uncontrolled reactions are the result of "anxiety". Stress-related reactions occur whenever (from the perspective of the individual) there are divergences between individual abilities and performance-based expectations.

Coping strategies

Animals usually react with a whole range of coping strategies to different types of stress (WECHSLER, 1995); in the course of their evolution they have developed variations characteristic for the species. To an animal it is important whether or not it is in control of a situation or whether the danger is rated higher than the individual strength or reaction potential. Active coping strategies, such as escape or fight (direct confrontation) have turned out to be succesful in situations where the animal is able to control the “stressor“. Passive coping strategies such as immobility, reduced awareness of its surroundings and apathy, on the other hand, are shown by animals when the “stressor“ seems to be beyond control (KEAY and BANDLER, 2001). The active animal, which tries to directly manipulate the “stressor“, and the passive animal, which tries to reduce the emotional stress caused by the “stressor“, represent the two distinct but equivalent coping strategies.

Only through individual perception and evaluation does a stimulus turn into a stress stimulus. Individual differences and the dissimillitudes of the stressors account for different stress reactions. These circumstances render the interpretation of stress more complicated. Active strategies, however, are frequently accompanied by a stimulation of the sympathetic nervous system (hypertension, tachycardy), passive strategies, on the other hand, by an inhibition of the sympathicus (hypotension, bradycardy) (BANDLER et al., 2000).

As prey animals, horses, when confronted with something new or even threatening, react in an anxious way that is congenital. To a certain extent this behaviour is reinforced by current pain or previous experience. In fear-inducing situations, horses develop strategies aimed at the modification of stressful or aversive situational contexts.

One type of passive coping strategy that could be observed with some horses was immobility (in the chute). When there is no way to escape, this is a coping strategy that is typical of prey animals. The “immobility“ of some horses when the flank strap is used can also be described as “acquired helplessness“ since the behavioural reaction of “lashing out/bucking“ (or, respectively, “shying“) in answer to the anxiety-causing signals is (no longer) an option. The pathology of “acquired helplessness“ usually includes:

A motivational deficit: delayed preparation to take action

- A cognitive deficit: increasing difficulty to learn at a later stage that one’s own activities can be effective
- An emotional deficit: mood ranging from dejected to depressed as a result of uselessness of one’s own activities (HECKHAUSEN, 1989).

Conditioning

“The horses have learnt to do their job,“ is claimed not only by the rodeo organisers, time and time again. At the rodeo events observed or evaluated, two types of conditioning patterns could be established.

Type 1

The horses were already visibly nervous before the flank strap was tightened in the chute, and they already showed most violent defence reactions at this stage. When the chute was opened, the horses were non-uniform in their behaviour, some stood still in the chute as if they had been rooted to the spot, some started galloping as in flight performing very violent and seemingly uncoordinated bucking movements, while others arched their backs and bucked on the spot. Even after throwing off the cowboys, their defence reactions were so strong that the mounted helpers could not easily, if at all, release the flank straps.

Apparently the horses in the chute perceived the loose fitting of the flank strap as the conditioning signal to start the defence reaction. If this signal always appears at the same place or in the same surroundings, it may be associated with the reference situation, which becomes visible in the animals’ stressed facial expressions already upon entering the chute.

Type 2

The horses were fairly calm and relaxed in the chute when prepared for the start. Defence reactions could not be observed in these cases. In the arena they showed galloping as in flight accompanied by less frequent and less spectacular bucking activity, which, however, could also be observed after the cowboy had been thrown off and the flank strap released. After that the horses were visibly relaxed.

Apparently, the horses have learnt to buck in reaction to an aversive stimulus (flank strap and rider) in order to escape this stimulus as quickly as possible. The horse uses the active coping strategy of “bucking“ to react against the stressor (flank strap). Once the rider has been thrown off, the flank strap is usually released immediately. The horse has learnt from the consequences of its own actions that the throwing-off of the rider is immediately followed by the release of the flank strap.

It is widely known that among normal riding horses there are animals that buck under their rider more or less regularly. In most cases this kind of problematic behaviour comes from initial reflexive bucking, for example, in response to unpleasant interference

on the rider's part. The horse learns quickly that it can shed its rider by bucking. If by bucking, the horse achieves the same success again and again, it will most likely repeat this behaviour more and more frequently in the same or similar situations. Consequently, it should not be too difficult to specifically teach a horse to buck. This requires a well-structured training concept and positive reinforcment (ROBERTS, 2002). The flank strap would then be completely unnecessary.

Bullriding

From a legal point of view, the riding of adult bulls has to be called into question. It is even more obvious than in the case of horses that these competitions are performances that use the bull's natural defence behaviour for purposes of show effects. In our opinion, this is not in accordance with the animal protection law and, for this reason, should no longer be allowed to take place.

Flank straps are used on the bulls as well, however, the flank straps are not normally tightened into place but loosen automatical during bucking activity. For anatomical reasons, the flank strap has to be tightened across the urethra, which could add to the animal's pain. In contrast to the horses, it could be observed that the defence action was only aimed at throwing off the riders and that the animals calmed down immediately afterwards. Compared to the horses, the operating range of the bulls was fairly limited. Once again in contrast to the 'prey animal' horse, it could be observed that the bulls did not run away after throwing off a rider but turned around immeditely and went for the thrown-off rider. This is the reason why so-called "rodeo clowns" are used. It is their job to draw the bull's attention away from the thrown-off rider in order to prevent the latter from being attacked.

As the flank strap loosens to insignificance during the bucking activity, defence reactions against the flank strap could not be observed. However, videotapes with bulls, on which inflexible flank straps were used, document reactions against the flank strap, although they were less pronounced than those of the horses.

Wild Horse Race

In this discipline several teams are in the arena at the same time, each team with one designated "wild horse". The horses are placed individually in the chutes. Each team is positioned outside a chute and one cowboy holds a long rope that is fastened to the halter of the respective horse. After the opening of the chute one team member holds the horse by the rope while the other two cowboys try to put a strap on the struggling horse and fasten the strap. Then one team member is lifted onto the back of the horse

or hops up by himself, the rope is released and the rider has to stay on horseback over a certain distance.

As has already been described in the rodeo section, horses could be observed that refused to leave the chute. In this case, the cowboys try to pull the horse with the rope out of the chute while two cowboys try to get the horse going by making quick movements in the direction of the horse. Other horses leave the chute with a jump but then freeze in the arena. In this case too the team members try to get defence reactions from the horse by, for example, jumping towards the horse or dangling the rope. Not infrequently the horses attempts to escape, in combination with the pulling of the rope, result in the horse falling. In some cases, for example, it could be observed that horses reared up and fell backwards, and it also happened that a horse fell backwards against the steel pipes surrounding the arena.

It was absolutely impossible to see the sporting aspect of this discipline, as it was apparent that the sole objective was to force the horse to do spectacular stunts for the spectators' entertainment. The spectators are given the impression that it takes several men to "tame a wild horse" ("wild horses fighting against men power"). Apart from the high injury risk for the horses, events that have men fighting against animals violate the established set of values for the handling of animals and cannot be tolerated anymore these days. Evening and night shows that are a part of some of these events have to be seen in a critical light as well, as an increased risk of accidents and injuries is considered acceptable (poorly illuminated arena, blinding spotlights, camera flashes). Even a careless exposure to pain, suffering and harm already meets the criteria of a breach of regulations under paragraph 18 section 1 no. 4 in conjunction with paragraph 3 no. 6 TierSchG.

The use of spurs

So-called "Western" spurs could be observed at all events. The organisers maintain that in Germany it is mandatory to have all wheeled spurs "disabled" with adhesive tape. In the scenes evaluated, however, it could be observed that, during particularly violent defence movements of the animals the cowboy was unable to control the use of the spurs. Also, in order to be able to better compensate for the horse's bucking, the rodeo rider is seated on the horse with his upper body bent very far backwards. This way his legs are in front with the feet close to the animal's shoulders or, respectively, neck. Especially with horses that remain rigid in the arena, it could be observed that spurs were intentionally and forcefully used on both sides of the neck in order to make the horses move forward and continue bucking.

In equestrian sports, spurs are used as subtle signal givers to effect modifications of behaviour. The individual potential of a horse to learn new behaviours is significantly dependent on the learning aids and methods used during training situations. As

behaviour is also determined by its consequences, it is possible to influence a horse's behaviour both in everyday work with the animals and in equestrian sports competitions. As long as spurs are exclusively used to refine learning aids, there is no sensible reason to consider them to be against animal protection. If they are used as instruments for repeated painful punishment or to make exhausted horses move forward, they are no longer compatible with the concept of the animal protection law (PICK, 1996).

It has already been pointed out that it is a sign of anxiety and stress if horses stand still. Scientific research into learning mechanisms have shown that learning under anxiety and/or stress is impossible (ROLLS, 1999). The learning of alternative behaviours is also impossible, if options are not available.

At the Veterinarian College (Tierärztliche Hochschule) in Hannover, the consequences of uncontrolled punishment were examined using electric eduacation collars ("Teletact") on dogs. In cases of close temporal and situation conform linking of a punishment and an (undesired) behaviour, there is little or no increase in the plasma cortisol value (physiological stress parameter) (STICHNOTH, 2002). On the other hand, in cases of insufficient linking, for example, when ignoring the predictability of the animal or insufficient training of alternative behaviours, the levels increase significantly and after four weeks will reach a higher level than with a "correct" use of the device ("Teletact"). According to Stichnoth (2002) the cortisol values increase the most in dogs with a missing connection or in those dogs with lacking predictability and controllability of the aversive stimulus.

The repeated and uncontrolled use of spurs in rodeo prevents, in horses, the possibly incipient predictability and controllability of the aversive situation, and, as a consequence, it becomes impossible to facilitate the learning of a behaviour desired by human beings. Since the horse is not offered an alternative desired behaviour and since it does not receive a reward (for example in the form of positive reinforcement), there is no way the animal can modify its behaviour and apply the new behaviour to similar situations in the future. According to our observations as detailed above, spurs in rodeo are not used in a controlled way and in accordance with their purpose. Therefore, the wearing of spurs in rodeo has to be rejected for animal protection reasons.

Ethical and legal apects

Rodeos are not traditional events in this country. In general, competitions of the "man-against-animal"-type ("wild horses fighting against man-power") cannot be reasonably justified, as the infliction of pain, suffering or harm for "the amusement of the people" has been contradictory to the established set of values for quite some time. Competitions of this type are also suited to make, especially children and young people, believe that society tolerates the use of animals as mere objects . This does not match the ideas of society as a whole, as becomes apparent in the fact that since 1990 the

German Civil Code has expressly stated stated that animals are not to be considered as objects anymore (paragraph 90 a).

As mentioned above, companies that organise rodeos require permission under paragraph 11 TierSchG. Because of what has been detailed above, a paragraph 11-permission is to be granted under appropriate “conditions and restrictions“ (under paragraph 11 section 2 a) so as to ensure the protection of animals from pain, suffering or harm. It has been pointed out that it is also irrelevant whether or not there is the risk of „substantial“ or “non-substantial“ pain, suffering or harm. In view of animal protection as a national objective (German Constitution, article 20 a) directed at legislature, judiciary and executive, since 2002, there has also been a greater responsibility for the authorities charged with animal protection. They have to anticipate and prevent animals from being exposed to suffering. It is therefore appropriate to grant a permission to hold rodeo events only if flank straps and spurs are prohibited. In general, bull riding and “wild horse race “ should not be allowed at all.

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Die Richtigkeit und Vollständigkeit vorstehender Übersetzung aus der deutschen Sprache wird bescheinigt.

Düsseldorf, den 17. Oktober 2005

I hereby certify the correctness and sufficiency of the above translation from the German language.

Duesseldorf, 17th October, 2005

Kay Schindzielorz

Für das Gebiet des Landes Nordrhein-Westfalen ermächtigter Übersetzer für die englische Sprache.

Authorised translator for the English language for the territory of Northrhine-Westfalia.

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May 22, 2006

Annex

to the TVT - Expert opinion regarding rodeo events in the Federal Republic of Germany from a legal, ethological and ethical perspective

Material and Method

This annex to the rodeo expert opinion of March 12, 2005 which is based on digital video recordings from 14 rodeo events, which took place in the Federal Republic of Germany between 2001 and 2005, documents, analyses and evaluates the behavioural expression of the horses involved in the disciplines Bare Back Riding (BBR) and Saddle Bronc Riding (SBR).

Attachment A1 to this annex specifies

1. City the event took place in
2. Date of the event
3. Organiser of the event (NB: two name changes during the period in question due to changes in ownership)
4. Number of BBR and SBR starts analysed.

The video recordings were watched and anyalysed in real time, slow motion (speed reduced by four times) and in some cases in the image by image mode. Video-based behavioural analysis was chosen because this was only way to ensure an exact and true evaluation of the horses' behaviour. Exclusive observation in real time leaves many behavioural elements unconsidered as they occur too quickly for the human eye.

For the data accumulation each start in a discipline (BBR, SBR) was divided into the following sequences (see also attachment A2 "List of values"):

1. Chute: Horse in the chute/start box
2. Rider Down: time between exit from chute and throwing off or pick up of rider (by the pick-up men)
3. Flank Off: Period between throwing off or pick up of rider and removal/release of the flank strap
4. Exit Arena: Period between removal/release of flank and exit from arena

In all, 387 sequences from 137 starts (76 x BBR, 61 x SBR) were analysed (see chart 1)

So as to be able to comprehensively document and describe the horses' facial expressions, the following elements (including further differentiation of qualitative elements) were added to a list of values and used for data accumulation (see also attachment A2 "List of values"):

1. Position of the ears
2. Angle of mouth opening
3. Appearance of mouth split
4. Tightening of nostrils
5. Tightening of upper lip
6. Tightening of lower lip
7. Tightening of cheek muscles
8. Position of tail

In addition, another 17 qualitative elements of facial expressions were used to accumulate data through Yes/No decisions (see attachment A2 "List of values"), and other occurences were documented (under "Comments").

The data established were entered into a data sheet created for this purpose using the database software FileMaker Pro 6.0Dv4. The descriptive statistics method was used to evaluate selected elements and their combined occurence. This allowed for an empiric frequency distribution to be obtained for these elements which already display significant peculiarities in the distribution of elements. Analytical statistics have not been carried out yet. The graphs were created using Microsoft Excel for Mac and are intended to illustrate the distribution of elements.

Furthermore, in an exemplary sample of 100 starts (50 BBR, 50 SBR), the time the flank stayed in place was measured using an analogous stopwatch. From these data (in sec.) simple statistical values were derived (mean and standard deviation) The period measured in this case was the time between the opening of the chute and the removal of the flank.

Results

1. Analysed sequences

Chart 1 specifies the sequences evaluated for the Bare Back Riding (BBR) and Saddle Bronc Riding (SBR) disciplines.

Chart 1: Number of sequences analysed

Sequence	Discipline BBR (n=76)	Discipline SBR (n=61)	Total
Chute	49	27	76
Rider Down	67	56	123
Flank Off	71	51	122
Exit Arena	31	35	66
Total	**218**	**166**	**387**

Because of differing qualities and recording times of the video recording at hand, not all the sequences could be analysed with each start. Also, within each sequence not all the aspects included in the list of values could be documented because, for example, in the Chute sequences the horse's body or head was often hidden from view by the open chute gate, or the horses in the arena were too far away from the video camera (or, for example, hidden from view by the pick-up horses) to identify the facial expression. Where in the following mention is made of "display", this does not refer to the total number of expression elements which in their interaction allow conclusions as to the respective horse's sensitivity/emotions (see also attachment to the LAGV [state-level research group for sanitary consumer protection] meeting on December 14-15, 2005: "The facial expressions of horses as a means to evaluate the sensitivity of rodeo horses."). This is why the behavioural expressions referred to are listed for each display.

The following results represent a selection of specific elements and their combined occurrence. For the descriptive statistic detailed in the following, elements and combinations of elements were used which are considered to be identifiable and comprehensible for the untrained observer. An exception to this are the elements "tightening of upper lip" and "tightening of lower lip", which often can only be evaluated when viewed in slow motion mode. However, these elements, in combination with the position of the ears, were indispensable for the creation of simple displays. Further analysis of different elements and their combination, or of specific horses can be carried out within the 387 individual observations.

When in the following results some horses are identified by name, this is only done to illustrate that those horses showed the respective elements in a given sequence more frequently than other horses. A complete analysis on the basis of each and every single horses would have exceeded the scope of this documentation at this stage.

2. Horses used

13 different horses were used in the BBR discipline, and six different horses in the SBR discipline. Three of the six horses used in the SBR were also used in the BBR discipline. Ten horses were used in the BBR discipline exclusively (leaving aside their being used in the Wild Horse Race).
Six horses (Black Bart, Showboat, Comanche, Buckshot, Doc, Sally) have been used in the respective rodeo discplines for at least four years. Seven horses used in the the video recordings available for analysis could only be observed at between one and three events.

3. Analysis of the Chute sequence

In 46 of the 76 chute sequences facial behaviour (expression elements of the head) could be analysed. In no case was the display “relaxation/well-being“ observed. 54% of the horses showed the display “fear/anxiety“ (ears pointing sideways, upper lips pushed sharply forward, tight lower lip with pronounced chin), 41% of the horses showed a defensive-aggressive display (“fear agression“, ears sideways, upper lip tightly withdrawn, lower lip tightly pushed forward or tight with pronounced chin).
Further behavioural elements could be observed in the chute (chart 2) allowing one to draw conclusions regarding defensive behaviour and/or inability to cope. It is striking that the respective elements are frequently shown in certain horses.

Chart 2: Behaviour in Chute

Feature	**Absolute number**	**Of those, n times in horse “...“**
Kicking	10	7x “Showboat“
Bucking	21	13x “Showboat“
Head jerking up	26	10x “Showboat“, 8x “Black Bart“
Head rolling down	10	6x “Showboat“
Shaking of the head	5	2x “Showboat“
Licking	6	4x “Showboat“
Chewing	9	3x “Showboat“
Weaving	6	4x “Showboat“
Rearing up	11	4x “Sally“
Falling	3	2x “Sally“

Horses that are known to buck or rear in the chute have a rope tied around their neck by a helper who, from outside the chute, holds onto the rope ends giving an upward or downward pull thus trying to prevent the horse from “head rolling down“ or “rearing up“, respectively.

4. Analysis of the “Rider Down“ sequence

Compared with the chute sequence, a wider range of facial expression in the horses could be observed in the period between the opening of the chute and the throwing off of the rider or his being picked up by the pick-up men. The following displays were frequently observed:

- Display 1 (D1): Ears pointing forward, upper lip tightly drawn forward, tight lower lip with a pronounced chin
- Display 2 (D2): Ears pointing to the side, upper lip tightly drawn forward, tight lower lip with a pronounced chin
- Display 3 (D3): Ears pointing backwards and pressed close to the head, upper lip tightly drawn forward, tight lower lip with a pronounced chin
- Display 4 (D4): ears pointing forward or to the side, upper lip tightly pulled back, lower lip tightly pushed forward or tight with a pronounced chin
- Display 5 (D5): Ears pointing backwards and pressed close to the head, upper lip tightly pulled back, lower lip tightly pushed forward or tight with a pronounced chin

– Other (O): Combinations of the position of the ears and tightening of the upper and lower lips not possible as the individual elements are not included in the accumulated data.

Displays 1 to 3 suggest fear/anxiety, displays 4 and 5 show depressive-aggressive expressions (anxiety-based aggression). The ears positioned forward reflect the concentration of the horses in question on what is before them, in the direction of movement. This is why in display 1 and display 4 it is not the position of the ears that is relevant for the evaluation of the sensitivity of the horse but rather the appearance of the upper and lower lips. Chart 3 details the frequency of the displays (D1-D5) as observed in the 123 starts, listed separately for BBR and SBR. This sequence also shows a striking frequency of certain displays in certain horses.

Chart 3: Displays during the "Rider Down" sequence in the Bare Back Riding (BBR; n=67) and Saddle Bronc Riding (SBR; n=56) disciplines.

	BBR		SBR	
Display	**Absolute number**	**Of those, n times by horse "..."**	**Absolute number**	**Of those, n times by horse "..."**
D1	12	6x "Spots"	10	3x "Black Bart" 3x "Geronimo"
D2	33	15x "Showboat"	31	15x "Comanche"
D3	6	2x "Showboat" 2x "Black Bart"	3	3x "Buckshot"
D4	8	6x "Doc"	5	4x "Buckshot"
D5	6	6x "Buckshot"	7	7x "Buckshot"
O	2		0	

In the "Rider Down" sequence the behavioural elements "bucking", "kicking" and/or "vertical tail whipping" could be observed in 116 of the 123 starts (= 94%). These behavioural elements are part of the functional cycle of harm avoiding behaviours (defense reactions). Chart 4 gives a survey of the frequency of these behavioural elements (in percentages) for the Bare Back Riding and Saddle Bronc Riding disciplines, respectively.

Chart 4: Frequency (in percentages) of the behavioural elements "bucking", "kicking" and "vertical tail whipping" for the "Rider Down" sequence in the Bare Back Riding (BBR; n=67) und Saddle Bronc Riding (SBR; n=56) disciplines

Behaviour	**BBR**	**SBR**
Bucking	60 %	86 %
Kicking	-	-
Bucking + kicking	34 %	9 %
Vertical tail whipping	82 %	84 %

Other elements could only be observed in a small number of cases. They will therefore be portrayed in comparison with those found in the "Flank Off" sequence (Chapter 5).

5. Analysis of the "Flank Off" sequence

From the moment the rider is thrown off or picked up by the pick up men, until the moment the flank comes off, the same displays could be observed that could also be observed in the "Rider Down" sequence, however with varying frequency. Like in the "Rider Down" sequence, the display 2 (fear/anxiety) with the ears pointing to the sides was predominantly displayed.

As in 36% of the starts the pick up men were unable to remove the flank strap, the moment the "Flank Off" sequence ends is either when the flank strap is removed in the arena or the rodeo horses leave the arena with the flank strap still in place.

Chart 5 gives the frequency of the displays (D1-D5 and O) observed in 122 starts, separately listing the details for BBR and SBR (for explanations regarding D1-D5 and O see chapter 4). It is also an amazing phenomenon of this sequence that certain displays are frequently displayed by certain horses.

Chart 5: Displays during the "Flank Off" sequence in the Bare Back Riding (BBR; n=71) and Saddle Bronc Riding (SBR; n=51) disciplines

	BBR		SBR	
Display	**Absolute number**	**Of these, n times by horse „..."**	**Absolute number**	**Of these, n times by horse „..."**
D1	5	4x "Showboat "	2	2x "Black Bart"
D2	35	16x "Showboat"	26	12x "Geronimo"
D3	3		12	4x "Buckshot" 4x "Geronimo" 4x "Comanche"
D4	10	4x "Black Bart"	7	4x "Buckshot" 3x "Black Bart"
D5	15	5x "Buckshot"	4	4x "Buckshot"
O	3		0	

A striking behavioural element that could be observed in 31% of all starts in the Saddle Bronc discipline is the rodeo horses' "biting" aimed at the pick up horses. This behaviour was almost exclusively displayed by the horse "Buckshot" and "Comanche". The behavioural element "biting" is far more frequent in Saddle Bronc Riding than in Bare Back Riding (Chart 6), because in Saddle Bronce Riding the rodeo horse is close to the pick up man's horse as it is being held by a rope attached to its head-collar so as to enable the pick up man to release the flank.

In the "Rider Down" and "Flank Off" sequences, 11 of the 16 horses displayed varying degrees of open mouths (Chart 6).

When the chute was opened, "freezing", as a sign of fear when a situation or an individual "stressor" is perceived as beyond control, was displayed by 5 different horses in 10 starts (of these, 6 times by "Comanche").

Chart 6: Absolute frequency of the behavioural elements "Teeth visible", "Mouth wide open" and "Biting" in the "Rider Down" and "Flank Off" sequences for the Bare Back Riding (BBR) and Saddle Bronc Riding (SBR) disciplines

	Sequence "RiderDown"		Sequence "FlankOff"	
Element	**BBR**	**SBR**	**BBR**	**SBR**
Mouth slightly open ("Teeth visible")	4	6	2	7
Mouth wide open	3	3	8	12
Total	***7***	***9***	***10***	***19***
Biting	3	1	2	18

In the "Flank Off" sequence the behavioural elements "bucking", "kicking" and "vertical tail whipping" could be observed in 110 of the 122 starts (= 90%). These behavioural elements are part of the functional cycle of harm avoiding behaviours (defense reactions). Chart 7 gives a survey of the frequency of these behavioural elements (in percentage) for the Bare Back Riding and Saddle Bronc Riding disciplines, respectively.

Chart 7: Frequency (in percentage) of the behavioural elements "Bucking", "Kicking" and "Vertical tail whipping" in the "FlankOff" sequence for the Bare Back Riding (BBR) and Saddle Bronc Riding (SBR) disciplines

Element	**BBR**	**SBR**
Bucking	14 %	14 %
Kicking	11 %	4 %
Bucking + kicking	56 %	78 %
Vertical tail whipping	85 %	78 %

In Saddle Bronc Riding it was conspicuous that the horses with riders hardly ever displayed any "kicking" behaviour (sequence "Rider Down"). However, this behaviour was almost always displayed after the rider got off the horse (sequence "Flank Off"). Once the flank was removed, only eight horses in the two disciplines showed bucking, kicking and vertical tail whipping behaviours. This suggests that not the rider but the flank strap is what causes this type of defense behaviour (see also "Exit Arena" sequence).

6. Analysis of the "Exit Arena" sequence

Of the 137 starts only 66 could be used for an analysis of the period between the removal of the flank strap and the rodeo horses' exiting the arena. In the case of the remaining 71 starts the horses left the arena with the flank still in place, because the pick up men had not been able to release the flank strap, or this sequence had not been recorded.
In the "Exit Arena" sequence in the Bare Back Riding discipline (n=31), 22 starts could be analysed with regard to the position of the ears and the extent of tightening of the upper and lower lips. In this discipline, it was striking that Display 2 (fear/anxiety) was no longer seen, but Display 4 (defensive aggresion/anxiety) was shown by most horses (see chart 8). Once the flank strap was removed, 9 of 13 horses positioned their ears forward and mostly trotted to the exit of the arena. Of the horses which displayed vertical tail whipping behaviour, all but one abandoned this behaviour immediately upon the removal of the flank strap.

In the “Exit Arena“ sequence in the Saddle Bronc Riding discipline (n=35), 28 starts could be analysed with regard to the position of the ears and the extent of tightening of the upper and lower lips. In contrast to the BBR, in SBR Display 2 (in 50% of the starts that could be analysed) was predominantly shown even after the flank strap had been removed, followed in frequency by Display 4 (in 39% of the starts that could be analysed) (Chart 8). In 71% of the starts the horses exited the arena with their ears pointing to the side. In the SBR discipline, the number of horses that continued to show bucking, kicking and vertical tail whipping behaviours after the flank was removed was higher than in BBR. This behaviour can probably be attributed to defensive behaviour aimed at the back saddle belt.

Chart 8 gives the frequency of the displays (D1-D5 and O) observed in this sequence, separately listing the details for BBR and SBR (for explanations regarding D1-D5 and O, see chapter 4).

Chart 8: Displays during the “Exit Arena“ sequence in the Bare Back Riding (BBR; n=31) and Saddle Bronc Riding (SBR; n=35) disciplines

	BBR	SBR	
Display	**Absolute number**	**Absolute number**	**Of these, n times by horse “...“**
D1	1	3	2x “Geronimo“
D2	1	14	8x “Comanche“
D3	0	0	
D4	19	11	6x “Geronimo“
D5	1	0	
O	9	7	

In general, one can observe certain behavioural elements in horses in and after situations of conflict and stress which are also called displacement activities. These include, among others, the shaking of the head and body, licking and chewing. In the “Exit Arena“ sequence these behaviours could only be observed in 17 starts, but it was conspicuous that the horses used in SBR showed these behavioural elements less frequently than the BBR horses. Chart 9 provides an overview.

Chart 9: Absolute frequency of the behavioural elements “Shaking of the head“, “Shaking of the body“ “Licking“ and “Chewing“ in the “Exit Arena“ sequences for the Bare Back Riding (BBR; n=31) and Saddle Bronc Riding (SBR; n=35) disciplines

Element	**BBR**	**SBR**
Shaking of the head	5	1
Shaking of the body	1	-
Licking	4	-
Chewing	5	1

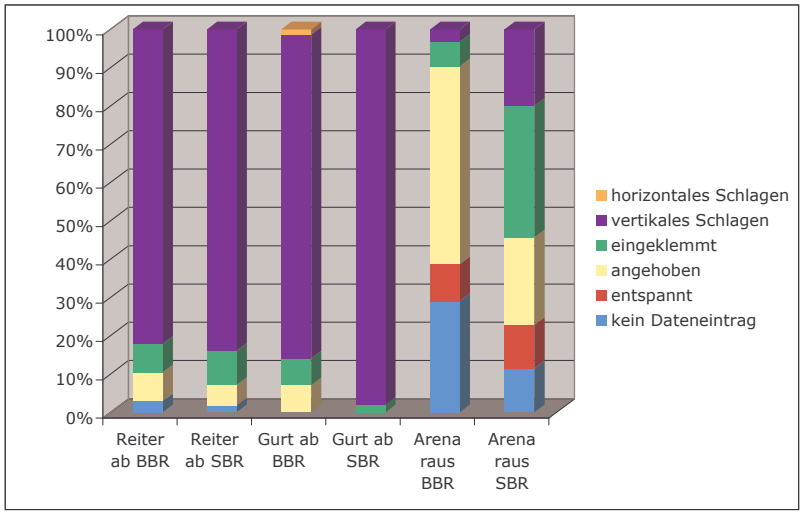
7. Effect of the flank strap on the horses' behaviour

It has already been mentioned in the chapters about the results for the "Rider Down", "Flank Off" and "Exit Arena" sequences that the defensive behavioural elements "vertical tail whipping", "bucking" and "kicking" have to be attributed to the flank strap. For better illustration, Chart 10 gives the absolute frequency of the tail position observed in the three respective sequences. Illustration 1 gives a graphical representation of the frequency (in percent) of the various elements of the tail positions observed. Chart 11 once again gives the absolute frequency of the behavioural elements "bucking"and "kicking" for the time between leaving the chute and exiting the arena, contrasting the BBR and SBR disciplines. The corresponding graphical representation is contained in illustration 2.

Chart 10: Absolute frequency of the tail position observed in the "Rider Down", "Flank Off" and "Exit Arena" sequences in Bare Back Riding (BBR) and Saddle Bronc Riding (SBR)

	"Rider Down"		"FlankOff"		"ExitArena"	
Tail position	**BBR (n=67)**	**SBR (n=56)**	**BBR (n=71)**	**SBR (n=51)**	**BBR (n=31)**	**SBR (n=35)**
Relaxed	0	0	0	0	3	4
Raised	5	3	5	0	16	8
Tail between legs	5	5	5	1	2	12
Verticales tail whipping	55	47	60	50	1	7
Horizontal tail whipping	0	0	1	0	0	0
No data entry	2	1	0	0	9	4

Illustration 1: Graphical representation of the tail position in the "Rider Down", "Flank Off" and "Exit Arena" sequences in Bare Back Riding (BBR) and Saddle Bronc Riding (SBR)



Column headers:

Rider Down BBR
Rider Down SBR
Flank Off BBR
Flank Off SBR
Exit Arena BBR
Exit Arena SBR

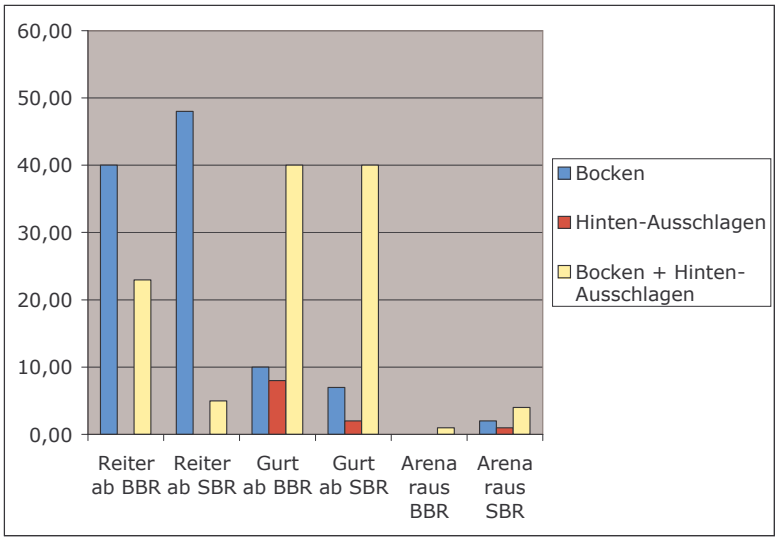
Legend:

Horizontal tail whipping
Vertical tail whipping
Tail between legs
Raised
Relaxed
No data entry

Chart 11: Absolute frequency of the behavioural elements "Bucking" and "Kicking" observed in the "Rider Down", "Flank Off" and "Exit Arena" sequences in Bare Back Riding (BBR) and Saddle Bronc Riding (SBR)

	"RiderDown"		"FlankOff"		"ExitArena"	
Element	**BBR (n=67)**	**SBR (n=56)**	**BBR (n=71)**	**SBR (n=51)**	**BBR (n=31)**	**SBR (n=35)**
Bucking	40	48	10	7	0	2
Kicking	0	0	8	2	0	1
Bucking + kicking	23	5	40	40	1	4
No bucking or kicking	4	3	13	2	30	28

Illustration 2: Graphical representation of the absolute frequency of the behavioural elements "Bucking" and "Kicking" in the "Rider Down", "Flank Off" and "Exit Arena" sequences in Bare Back Riding (BBR) and Saddle Bronc Riding (SBR)



Column headers:

Rider Down BBR
Rider Down SBR
Flank Off BBR
Flank Off SBR
Exit Arena BBR
Exit Arena SBR

Legend:

Bucking
Kicking
Bucking + kicking

So as to obtain an idea of for how long the flank strap stayed in place on the horse's body, an analogous stopwatch was used to measure the time between the opening of the chute and the removal of the flank strap on the basis of a sample of 100 starts (50 BBR and 50 SBR).
The result was that the flank strap, on average, remained in place for 39 sec in BBR (SD: ± 16 sec) and for 38 sec in SBR (SD: ± 16 sec). The longest time was 83 sec in BBR and 96 sec in SBR with 36% of the horses (n=100, mainly in BBR) leaving the arena with the flank still in place. In most cases, these horses were "Showboat" and "Black Bart", which were either kicking so violently or galloping so fast that the pick-up men were unable to reach the flank strap.

8. Latest additions

The TVT already possesses video recordings from the first public rodeo event in 2006 held by organizer "Rodeo America". The event took place in Meyen on May 14-15, 2006. In the Bare Back Riding and Saddle Bronc Riding disciplines at this rodeo event, two horses were used for the first time ("Browny": gelding, brown horse with a white mouth, small white star on the forehead; dark brown horse (name unknown) without mark) beside those horses that had already been used in previous years ("Showboat", "Comanche", "Geronimo", "Black Bart").

These new video recordings have not been analysed in depth yet. A precursory analysis, however, suggested that the new horses showed a definite anxiety/panic display with the wide open mouth from the moment of leaving the chute to the removal of the flank. While in the chute, both horses displayed head shaking behaviours.

Another thing that caught the attention was the behaviour of the horse "Showboat" in the chute. There was violent kicking and bucking. At times this behaviour was so extreme that the person in charge of tightening the flank strap had difficulties in doing so. As a counter measure a rope was tied around the horse's neck and and fixed to the chute's side wall. A helper who was standing high up on the side wall, seized both ends of the rope that was tied around the horse's neck, and guided it over the chute's top horizontal steel bar and leaned backwards. So as to be able to generate even more pull force the helper put one leg up against the side wall. This measure caused the horse's head to be pulled close to the wall. Only at the start (opening of the chute) did the helper release one end of the rope. This horse "Showboat" has been used in Bare Back Riding events since 2003. On 8 August 2004 (rodeo event in Walldorf) the horse released urine while bucking in the arena (expression of extreme panic), and since the year 2004 weaving has been observed in the chute (sign of chronic inability to cope).

9. Conclusion

In all 137 starts from the 14 rodeo events between 2001 and 2005 that were analysed, the horses involved displayed abnormal behaviour in at least one sequence. In not a single start could a display of relaxation/well-being be discovered. However, the horses used showed varying degrees of intensity with regard to 2 to 9 different elements from the list of values with a yes/no decision (behavioural elements suggesting defense and/or inability to cope). There does not seem to have been a habituation effect in horses after having used in Bare Back Riding and Saddle Bronc Riding for four years.

Dr. Willa Bohnet

Hannover, May 22, 2006

Die Richtigkeit und Vollständigkeit vorstehender Übersetzung aus der deutschen Sprache wird bescheinigt.

Düsseldorf, den 12. Juni 2006

Kay Schindzielorz

Für das Gebiet des Landes Nordrhein-Westfalen ermächtigter Übersetzer für die englische Sprache.

I hereby certify the correctness and sufficiency of the above translation from the German language.

Duesseldorf, June 12, 2006

Kay Schindzielorz

Authorised translator for the English language for the territory of North Rhine-Westfalia.

A1: Evaluated rodeo videos:

- **Pullman City I – Passau/Eging a.S., 2001; Organizer: Rodeo USA**
  - BBR: 4 Starts SBR: 1 Start
- **Tübingen, 21.09.2002; Organizer: Rodeo USA**
  - BBR: 1 Start
- **Werlte, 25.05.2003; Organizer: Rodeo USA**
  - BBR: 4 Starts
- **Berlin, 27.07.2003; Organizer: Rodeo USA**
  - BBR: 2 Starts
- **Pullman City II – Hasselfelde/Harz, 09.06.2003; Organizer: Rodeo USA**
  - BBR: 4 Starts SBR: 1 Start
- **Osterscheps, 22.05.2004; Organizer: American Rodeo**
  - BBR: 3 Starts SBR: 3 Starts
- **Seelitz, 12./13.06.2004; Organizer: American Rodeo**
  - BBR: 12 Starts SBR: 10 Starts
- **Neu Ulm, 03./04.07.2004; Organizer: American Rodeo**
  - BBR: 3 Starts SBR: 5 Starts
- **Münchehofe, 25.07.2004; Organizer: American Rodeo**
  - BBR: 5 Starts SBR: 6 Starts
- **Walldorf, 08.08.2004; Organizer: American Rodeo**
  - BBR: 4 Starts SBR: 2 Starts
- **Berlin, 23./24.07.2005; Organizer: Rodeo America**
  - BBR: 8 Starts SBR: 10 Starts
- **Seitzenhahn, 27./28.08.2005; Organizer: Rodeo America**
  - BBR: 9 Starts SBR: 7 Starts
- **Tübingen, 03./04.09.2005; Organizer: Rodeo America**
  - BBR: 12 Starts SBR: 10 Starts
- **Pullman City I – Passau/Eging a.S., 01.-03.10.2005; Organizer: Rodeo America**
  - BBR: 5 Starts SBR: 6 Starts

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A2: List of values for rodeo AW.fp5

Horses:

1. Black Bart
2. 8-Ball
3. Buckshot
4. Comanche
5. Dancer
6. Doc
7. Geronimo
8. Leroy
9. Sally
10. Showboat
11. Sheila
12. Spots
13. Unknown 1
14. Unknown 2
15. Unknown 3
16. Unknown 4

Sequence:

1. Chute
2. Rider Down
3. Flank Off
4. Exit Arena

Ears:

1. to the front
2. to the side
3. backwards
4. ears moving independently

Mouth:

1. closed
2. teeth visible
3. wide open

Mouth shape:

1. short, horizontal
2. horizontal, prolongated backwards
3. arrow-like prolongated backwards and downwards
4. backwards and sharply downwards in an acute angle

Nostrils:

1. relaxed
2. widened
3. narrowed
4. change from expelling air/tensing

Upper lip:

1. relaxed
2. tensely drawn back
3. forward pointed

Lower lip:

1. relaxed (hanging down)
2. tensely pushed forward
3. tense with a pronounced „chin“

Cheek muscles:

1. relaxed
2. tense

Tail:

1. relaxed
2. lifted up
3. tail between legs
4. horizontal tail whipping
5. vertical whipping

YES/NO decisions:

- kicking backwards
- bucking
- pawing the ground with front foot
- jerking up of the head
- head rolling down
- shaking of head
- shaking of body
- licking
- chewing
- weaving
- blinking
- defecating

- urinating
- biting
- immobility
- rearing up
- shaking of the head
    - vertically
    - horizontally

Remarks: e.g.

- walking/trotting/galloping (after removal of flank strap)
- rope around the neck (in chute)
- head/mane stroking (in chute)
- flank strap still on (when exiting arena)
- falling (with indication of place: chute/arena)

Die Richtigkeit und Vollständigkeit vorstehender Übersetzung aus der deutschen Sprache wird bescheinigt.

Düsseldorf, den 12. Juni 2006

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Duesseldorf, June 12, 2006

Kay Schindzielorz

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Authorised translator for the English language for the territory of North Rhine-Westfalia.

The principle of the “flanks“ with rodeo horses

(General text, images and questions by Dr. Willa Bohnet, Institute for Animal Protection and Behaviour at the Veterinarian College Hannover;
answers and illustration1 by Anselm Hackbarth, Physics student at Hannover University)

Bucking is caused by a belt, the so-called flank strap, which is pulled tight in the lower abdominal area when the horse jumps out of the chute (see image 1).

Image 1

To tighten the flank, the belt is passed from the top ring through the bottom ring, back through the top ring and once again through the bottom ring. This is the equivalent of the block and tackle principle (see image 2).

Image 2

Question: What is the general block and tackle principle?

Answer: The basic principle of the block and tackle depends on the number of free rollers. This means that if you pull using two free rollers, you generate twice the force (friction ignored; note WB: powdering the flank reduces friction!). It is particularly interesting that you obtain an additional (third) free roller by changing the pull direction, thus intensifying the force threefold (see ill. 1).

Ill. 1

Pull direction up = threefold force intensification
Top ring
Belt to tighten the flank
Bottom ring
Pull direction down = twofold force intensification

Question: How much force has to be used to shorten the construction (by guiding the belt twice through the bottom ring) from 13 cm to ca. 4 cm (see image 3 and image 4)?

Image 3

Image 4

Answer: Unfortunately it is not possible to say how much force has to be used as this varies and depends on the material that is in between. For example, less force is required to constrict a soft pillow by 9 cm than would be required in the case of a harder material (horse). It would be possible to calculate (in Joule) the work required by applying the Enery-Work Theorem (work = force (in Newton) times distance (in metres)), if the force exercised was known. Concerning the force, the intensification through the block and tackle also has to be taken into account.
It is safe to say that if you pull as hard as you can, the entire force will impact on the horse. This being a closed system, the force (the horse's which expands the system, and the applied force) is completely equalised.
Example: Let us assume a force intensification through the block and tackle of 2.5 and a pull force of 100 kg (1000 N), which adults (even women!) should be able to achieve over the short-term easily. Shortening the distance by 9 cm (0.09 m) would cause work of 225 Joule to be done. Consequently, if you pulled as hard as you could, the full force would impact on the horse, in this case 2500 Newton. If the surface of the belt was also known, it would be possible to calculate the pressure (pa) according to force (N) / surface (m x m).

Hannover, March 2, 2006

Die Richtigkeit und Vollständigkeit vorstehender Übersetzung aus der deutschen Sprache wird bescheinigt.

Düsseldorf, den 12. Juni 2006

I hereby certify the correctness and sufficiency of the above translation from the German language.

Duesseldorf, June 12, 2006

Kay Schindzielorz

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