

# Effect of the Tellington Ttouch® Method on Horse Behaviour in Daily Practices

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## Abstract

During daily work practices handlers are most frequently injured by horse kicks, induced by their fear. That is why the establishment of safe working circumstances is of high importance. The main objective of the study was to examine the effect of the Tellington Ttouch® method (TT) on the horse behaviour during hoof care. The TT is a complex of circular hand movements made over various parts of horse's body to enhance trust, and improve health and performance. Within the experiment a group trial and a case study were carried out. Six Lipizzan horses were included in the group trial, which lasted for 2 weeks. In the 1<sup>st</sup> week, customary method was used and in the 2<sup>nd</sup> week the TT was applied. Each time horse's legs were lifted, the hooves were cleaned, and horse shoeing was simulated. During the hoof care horse's behaviour was observed and following parameters were measured: time needed for hoof care, number of attempts to withdraw each leg, number of actual leg withdrawals, and heart rate. Horse's cooperation was assessed by signs expressing aggressive behaviour - optical communication, on a scale of 1 – 5 points. Data were analysed using statistical programme SAS/STAT. Statistically significant differences between methods were estimated for leg withdrawal attempts and optical communication. The case study which lasted for 8 weeks included young problematic horse. The horse was kicking and showing threats toward its new owner when attempt to approach and touch its legs was made. After the first 4 week application of the TT, the horse became relaxed. In the following 4 weeks of continued application of the TT, statistically significant decrease of heart rate and an increase of optical communication assessment were observed. The two-month application of the TT resulted in an improved welfare and increased safety of work conditions.

**Keywords:** Tellington Ttouch® method; Horse; Behaviour; Hoof care; Welfare

## Introduction

Taking care of animal means providing quality life conditions. Life quality is connected to the welfare which refers to the state of an animal in relation to its environment, and can be measured [1]. Often times it is assessed as being good or inadequate in consideration of different aspects of animal's life conditions. Animals have a wide range of needs to be met, and animal husbandry comprises of many functional systems that are made to sustain these needs. The indicators of deficient life conditions and thus inadequate welfare include the consequences of poorly met needs such as reduced life expectancy, impaired growth, body damage, disease, behavioural anomalies, etc. [2].

Horses have to be fed, given water and cleaned on a regular basis, and this daily care includes providing hoof care. Handlers are most frequently injured by horse kicks as most accidents happen when on leg (grooming, cleaning stables, etc.) [3]. Kicking is a normal part of the equid ethogram, used for defence. Incidents involving kicking lead to injuries ranging from mild contusions to death [4]. To ensure the sense of security during daily work practices in handler and in horse, confidence in a safe working practice and minimisation of injury risk have to be reached.

It was found that fear is the most important influential factor of horse-human injuries [4]. Different authors [5,6] believe that horses kick out of fear, mostly as a response to prior aggressive handling or as a reflex to touching the hind legs. It is assumed that their fear can be soothed by gentle touch and calm voice rather than by punishment [5]. Horse's fear can be measured by aggression or flight response and by increased heart rate. The expected frequency of horse heart rate is 30 - 50 beats per minute [7].

Traditional training methods and handling practices attempting to achieve the obedience and desired behaviour in horse since its domestication have presumably been developed in the lack of consideration of its welfare. These methods have based on different approaches, ranging from physical restraint and constraint to the conditioning techniques using the positive (food, rest, stroke, calm voice,...) and negative (physical discomfort, pain or fear) reinforcements or punishment. Reinforcements have been applied

to encourage the desired behaviour by triggering horse's motivation. Positive reinforcement associates the desired behaviour with application of a positive stimulus, whereas a negative reinforcement is applied only until the horse performs the desired behaviour. Punishment on the other hand represents an action that stops or reduces the occurrence of undesired behaviour. In general, contemporary approaches used in work with horses are still founded upon traditional methods, based on application of negative reinforcements or punishment [6,8].

The Tellington Ttouch® training method established by Linda Tellington-Jones, by contrast, in achieving the same working goal reportedly reduces any existing discomfort, stress and fear in horse, performing specific tactile stimulation that resembles allogrooming. The system of touches – circular pressuring movements of the hands and fingers over different body areas is intended, among other, to increase relaxation and reduce stress in performance horse by activating cellular function. The induced well-being in horse associated with positive stimulus leads to display of desired behavioural and ultimately positive welfare changes [8-10]. The described outcome of this method is supported by a general premise that the tactile stimulation results in a satisfaction and relax response [11]. For example, in a group of 10-month old calves treated with the Tellington Ttouch® method during the first 4 weeks post partum, decreased blood cortisol level, lessened fear of humans and less frequent display of stress-related behaviour were observed at the abattoir compared to the control group [12].

The objective of this study was to examine the effect of the Tellington Ttouch® method on the horse behaviour during hoof care. The goal was to reduce resistance to hoof care, change existing aggressive behaviour and enhance trust between a horse and human to enable safe work conditions during hoof care. Comparison of the behaviour during the hoof care performed in a customary, traditional manner, measuring time needed to complete the performance and horse's heart rate was made in an experiment designed as a group trial and a case study. In addition to the measurements, number of horse's attempts to withdraw a leg, and horses' optical communication were assessed.

## Materials and Methods

### Animals

In the group trial, six Lipizzan horses kept for pedagogic and research purposes by University of Ljubljana, Biotechnical Faculty were included. Among them were two young horses born in 2011, which spent the major part of the trial at the pasture. Others were working (school) horses, kept in stable and used for riding and driving; 3 geldings born in 2005 and 2009, and a filly born in 2009.

The case study included a privately owned warmblood crossbred filly born in 2010. It was showing unwanted behaviour in form of distrust toward new owner despite the absence of any related bad experience. It was expressing threats with the rearing and ears laid back when an attempt to approach was made. The problem became even more serious when the hoof care took place; it started kicking whenever its legs were touched. It showed the most sensitive reactions when touching its head, abdomen or the inner part of the hind legs. Its owner was bitten frequently despite of being careful.

### Experimental design

**Group trial:** The trial lasted for 2 weeks in June and July 2013, 3 days a week. Each time the work with horses was carried out in the same order. During the first week horse behaviour throughout the hoof care was observed, performed in a manner horses were accustomed to (customary; traditional). During the second week horse behaviour was observed throughout the hoof care with the Tellington Ttouch® method application prior to the work. The hoof care started at 9 am, after the morning feeding and cleaning the stable. The work was performed in the stable where horses were housed.

Horse's heart rate (beats/minute) was measured using the measuring device Polar RS800CX G5 Equine. The data were downloaded from the device to the computer by programme Polar Pro Trainer Equine Edition 5.

Each part of the experiment started with a preparation of the horse (haltering the horse; tethering it in its box and setting the Polar equipment on the horse). After that lifting of all four legs was started, beginning with the front left leg, than front right leg, hind left leg, and ending with the hind right leg. After the leg lift, the hoof was cleaned with a wedge, and a sledgehammer was used to simulate the horse shoeing.

The following parameters were measured or assessed:

- time needed from the moment of entering the stable to the moment of exiting the stable, and the time of hoof care for each leg that was performed in between (in seconds),
- number of horse's attempts to withdraw each leg,
- number of successful leg withdrawals,
- horse's heart rate (beats/minute),
- optical communication – body language (position of the ears, eyes, lips and position of the head), scaled from 1 – 5

Optical communication was assessed to determine horse's willingness to cooperate in the activity. 1 point was noted at presence of undesired (aggressive) behaviour, and 5 points were noted when remarkable cooperation with human was observed (Table 1).

Points	Description	Willingness to cooperate in activity (%)
1	Horse has its ears laid back. Lips are highly compressed. Eyes are wide open and the horse is very attentive. Head is high.	0
2	Horse has its ears slightly laid back. Lips are less compressed. Eyes are open. Horse is attentive. Neck is raised.	1-33
3	Ears are placed straight. Lips are more relaxed. Eyes are normally opened. Neck is not raised anymore.	34-66
4	Horse has its ears pointing forward. It is relaxed. Lips are not compressed anymore. Eyes are normally opened. Neck is not tensed. Head is neither high nor low.	67-99
5	Horse has very relaxed look. Ears are pointed back or forward as a sign of understanding and cooperation. Lips are relaxed without any tension. Eyes are normally open and soft. Neck is slightly lowered and head is gently sloped. Horse is willing to cooperate 100%.	100

**Table 1:** Optical communication assessment taking into account the position of horse's ears, eyes, lips, and head

Number of successful leg withdrawals was rarely observed regardless the method used.

**Case study:** The case study lasted for 8 weeks. The performance of the Tellington Ttouch® method application started in October 2013, at the pasture. Three times a week, for 4 weeks the horse was caught and for 10 minutes a day Ttouches® were applied. The Ttouch® application was started at the head, followed by the neck and then gradually proceeded over the whole body. In November 2013 horse was relocated from the pasture to the stable. In the following 4 weeks the Tellington Ttouch® method continued to be used for three days a week. First the cleaning of the stall took place, during which the horse was tied inside the stall and given the hay. Next the 10 minute application of the Tellington Ttouch® method was performed, followed by the attempt to lift each leg in the same order as in the group trial, and to execute the hoof care. The work was executed in attempt to minimise the risk of injury incidence. As the work was in process, the observation of the horse's body language was carried out. The Tellington Ttouch® method was applied by the horse's new owner.

In the 6<sup>th</sup> week of experiment, the effort to gradually lift hind leg forward, toward front leg, was made. The leg was held in that position for 3 seconds and then slowly put back on the ground. In the 7<sup>th</sup> week the same action was conducted in addition to gentle circle movements performed with horse's hind leg. In the 8<sup>th</sup> week the procedure remained the same and the attempt to clean the hooves was executed.

### Tellington Ttouch® method

Under the name of 'Tellington Ttouch® method', Linda Tellington-Jones has developed more than 30 different Ttouches® for trust, awareness, health and performance [5]. In the study 3 Ttouches® were performed.

The method was applied under the guidance of Mrs. Darja Žnidaršič, Slovenian Tellington Ttouch® therapist and instructor, as the people applying the Ttouches® in the experiment have never performed it before.

### Statistical Analyses

Data were analysed using the statistical software SAS/STAT 9.2 [13]. The difference between the customary and the Tellington Ttouch® method was estimated comparing Least Square Means (LSM) with t-test.

## Results

### Group trial

Results showed statistically significant higher time needed for front left leg hoof care (+ 8.72 s;  $p = 0.0294$ ) during the Tellington Ttouch® method application, and significantly higher time needed for hind left hoof care leg (+ 11.56 s;  $p = 0.0026$ ) when applying the customary method (Table 2).

Number of leg withdrawal attempts altogether and for separate legs differed significantly between the methods ( $p = 0.0001 - 0.0246$ ), with exception of attempt to withdraw the hind right leg (Table 3). Generally, the numbers were higher during the customary method application (1.72 – 6.06) compared to the Tellington Ttouch® method (0.22 – 1.22). Difference estimate for each leg was around 1.5, and 4.83 for all legs.

Estimated middle values for horse's heart rate for different method application, made with t - test were not statistically significant and varied from 38.56 to 42.17 beats per minute (Table 4).

Variable (seconds)	Traditional method (LSM ± SEE)	Ttouch® method (LSM ± SEE)	Difference estimate	p - value
Total time needed for hoof care	306.50 ± 15.54	316.17 ± 15.54	9.67 ± 11.10	0.3921
Time needed for front left leg	55.00 ± 4.18	63.72 ± 4.18	8.72 ± 3.77	0.0294
Time needed for front right leg	59.33 ± 4.93	60.88 ± 4.93	1.56 ± 6.06	0.7995
Time needed for hind left leg	61.39 ± 4.31	49.83 ± 4.31	11.56 ± 3.46	0.0026
Time needed for hind right leg	50.11 ± 4.12	47.67 ± 4.12	2.44 ± 5.83	0.6784

**Table 2:** Least square means and corresponding standard errors (LSM ± SE) for the time needed for hoof care when applying the traditional or the Tellington Ttouch® method

Variable	Traditional method (LSM ± SEE)	Ttouch® method (LSM ± SEE)	Difference estimate	p - value
Number of attempts to withdraw legs	6.06 ± 1.32	1.22 ± 1.32	4.83 ± 0.91	0.0001
Number of attempts to withdraw front left leg	2.00 ± 0.64	0.44 ± 0.64	1.56 ± 0.65	0.0246
Number of attempts to withdraw front right leg	1.78 ± 0.43	0.28 ± 0.43	1.50 ± 0.41	0.0012
Number of attempts to withdraw hind left leg	1.72 ± 0.49	0.22 ± 0.49	1.50 ± 0.58	0.0163
Number of attempts to withdraw hind right leg	0.56 ± 0.19	0.28 ± 0.19	0.28 ± 0.22	0.2257

**Table 3:** Least square means and corresponding standard errors (LSM ± SE) for the number of leg withdrawal attempts

Variable (beats per minute)	Traditional method (LSM ± SEE)	Ttouch® method (LSM ± SEE)	Difference estimate	p - value
Difference in the horse's heart rate between methods	-4.94 ± 1.56	-6.05 ± 1.56	1.11 ± 1.98	0.5797
Horse's heart rate - front left leg	39.5 ± 2.43	42.17 ± 2.43	2.67 ± 3.43	0.4444
Horse's heart rate - front right leg	38.56 ± 1.13	41.67 ± 1.13	3.11 ± 1.57	0.0589
Horse's heart rate - hind left leg	39.89 ± 0.89	42.11 ± 0.89	2.22 ± 1.22	0.0809
Horse's heartbeat rate - hind right leg	39.78 ± 1.18	41.28 ± 1.18	1.50 ± 1.29	0.2581

**Table 4:** Least square means and corresponding standard errors (LSM ± SE) for horses' heart rate

Variable	Traditional method (LSM ± SEE)	Ttouch® method (LSM ± SEE)	Difference estimate	p - value
Optical communication	2.53 ± 0.23	3.28 ± 0.23	0.75 ± 0.14	0.0001
Optical communication - front left leg	2.31 ± 0.24	3.17 ± 0.24	0.86 ± 0.19	0.0002
Optical communication - front right leg	2.17 ± 0.20	3.31 ± 0.20	1.14 ± 0.21	0.0001
Optical communication - hind left leg	2.30 ± 0.27	3.11 ± 0.27	0.81 ± 0.20	0.0005
Optical communication - hind right leg	2.53 ± 0.22	3.03 ± 0.22	0.50 ± 0.21	0.0237

**Table 5:** Least square means and corresponding standard errors (LSM ± SE) for optical communication

Difference estimates for optical communication between the methods showed to be statistically significant ( $p = 0.0001 - 0.0237$ ), and ranged from 0.5 to 1.14 points. Estimates of optical communication were equal to 2.17 points or higher for both methods, and generally higher for the Tellington Ttouch® method (Table 5).

### Case Study

First three weeks of working with problematic horse no changes in behaviour were noted; the filly kept its ears flipped back.

Observable changes in horse's behaviour started in the 4<sup>th</sup> week of experiment; horse seemed more relaxed and its ears were placed straight more often. In that time, optical communication during the attempt to touch the hind legs was assessed by 1 point and heart rate measurement was 56 beats per minute.

After 8 weeks of the Tellington Ttouch® method application, horse's body language was assessed by 2 to 3 points. Ears were relaxed, lips were less compressed, and eyes were opened normally. Horse's average heart rate was 42.5 beats per minute. Estimated differences in optical communication and heart beat were statistically significant.

## Discussion

### Group trial

There were no significant differences estimated in the total time needed for hoof care between different method applications. The analysis confirmed significant differences only for both left legs, but no firm conclusion could be made based on the results. The attempt to withdraw a leg was noted rarely in the case of the Tellington Ttouch® method application. The biggest difference was estimated regarding the front left leg.

Horses' heart rate values were within the expected range all along the experimental period. There were no differences in the horse welfare between the methods applied, assessed by this parameter as a fear response. Being school horses, they were accustomed to greater exposure to human contact. In addition to having experiences with frequent use, that might influenced the results.

Body language assessments showed the horses were willing to cooperate with human and were not displaying any signs of unwanted behaviour throughout the duration of experimental period. They were relaxed and working with them was safe regardless of the method applied. Horses were assessed to show 33 - 66% willingness for cooperation (Table 1). Somewhat higher estimates for body language after Tellington Ttouch® method application are in agreement with belief that tactile stimulation improves the quality of relationship between horse and human [11].

### Case Study

Estimates of optical communication increased from 4<sup>th</sup> to 8<sup>th</sup> week. After 8 weeks of using the Tellington Ttouch® method, the horse expressed stress-free relationship towards human. It was very relaxed and acceptable to the application of the Ttouches® along the whole body. The horse stopped kicking and calmly accepted the hoof care. The assessment of the body language showed increased willingness to cooperate.

During the hoof care horse's heart rate decreased; from a slightly elevated value, which indicated presence of fear in the horse, to the normal heart rate. Similar observation of a heart rate decrease in case of using the Tellington Ttouch® method (from 53.9 to 47.3 beats/minute) was recorded in horse during the trailer load [9]. Results indicate that the implementation of the Tellington Ttouch® method in daily work practises can enhance horse's welfare by improving horse-human relationship and thus the safety of work conditions. In a relaxed working circumstances the risk of injury due to the kicking out of fear decreases.

Filly's unwanted behaviour has shown to be a consequence of fear, which could have been assigned to the change of an owner and/or the separation from the mother. Horse's behaviour towards strangers can differ from the behaviour toward known person [14]. Application of the customary method did not bring the desired effect. Punishment and presence of unfamiliar persons only increased the level of fear expressed by the horse. Application of Ttouches® together with kind, attentive handling on the contrary brought positive results, even during hoof care. This outcome is in agreement with the statement that horse usually kicks out of fear or fear related bad experience, and that such reactions could be changed with persistent positive attitude towards horse rather than by punishment [5]. It is also consistent with the suggestion that improved relationship with horse can be developed by expressing a calm attitude and applying gentle touches [15].

## Conclusions

In the trial including group of horses daily exposed to human contact, showing no problematic behaviour, having no previous bad experiences with people, and being considered to be safe to work with, no major differences in behaviour were noted as a consequence of the Tellington Ttouch® method application. No difference in willingness to accept leg lifting or hoof care was observed, compared to the application of customary method based on traditional practices of working with horses.

In the case study behavioural improvement of the problematic horse was evidenced. When the Tellington Ttouch® method was applied in the horse expressing signs of unwanted behaviour, the reduction of fear and hence the improvement of welfare was achieved. Horse accepted hind leg lifting and hoof care in a calmer manner.

As there was no other horse to compare with at that time, it cannot be firmly concluded that the improvement is the effect of the Tellington Touch® method application. It might well be the result of an increased amount of time spent with the horse, new positive experience with human attention or horse's adaptation to the new owner and environment.

To better understand the effect of the Tellington Touch® method, further research has to be conducted. Future studies should include bigger number of horses, different horse categories and/or examples of other routine work practices.

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