

Reflections of Grooming Issues on Body Care Behavioral Activities in Horses

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Abstract

Group of horses was used to investigate the reflections of grooming issues on body care behavioral activities. The elements of body care behavioral activities (self grooming, mutual grooming, social grooming, rolling and rubbing) were evaluated after partial and complete grooming of horses. Our results indicated that the elements of body care behavior decreased significantly ($P < 0.05$) after complete grooming of horses. The highest frequency and duration of self grooming were concentrated on the shoulder and trunk regions after partial and complete grooming, respectively. The frequency and duration of mutual grooming concentrated on the trunk region after either partial or complete grooming of horses. With regard to the social grooming, more than 2 horses indulged in performing this behavioral activity. During the social grooming, the hind quarters were the most targeted area in both partial and complete grooming of horses. Concerning rolling, the frequency and duration decreased significantly after complete grooming. Rubbing was only displayed after partial grooming of horses and disappeared completely after complete grooming. The frequency and duration of body care behavior activities varied from morning to afternoon. After partial and complete grooming, the released horses in the morning indulged in mutual grooming, social grooming and rolling. In the afternoon, after partial and complete grooming of horses, they indulged in self grooming of themselves that concentrated in the accessible body parts.

From this study, it could be concluded that complete grooming of horses was beneficial to this graceful creatures and save the time and energy for other useful behavioral activities to be displayed.

Introduction

The maintenance behavior of horses falls into four general areas: ingestive behaviors, coat care, thermoregulation, and rest. Coat care includes auto- and allo-grooming (Mutual and social grooming). Auto grooming consists of tail swishing, rolling, rubbing on inanimate objects or rubbing one part of the body on the other. For example, self-grooming can include rubbing or using the head to swipe at the body. Horses spend time grooming their own bodies, particularly around the hip and flank. This is

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affected by turning round, extending the head and nibbling repeatedly at the skin in these regions. They may occasionally also groom their limbs, both fore and hind, in the same manner (7). Rolling at pasture is also a form of grooming in the horse (8). On the other hand, mutual grooming involves grasping a fold of the partner's skin at a site dorsal of the neck and at the withers (11 and 6). This allo-grooming has been associated with physiological effects on heart rate (HR) (9; 10; 2 and 1),

Good grooming is essential to the health and appearance of all horses that are stabled or that are exercised or ridden. Grooming cleans the hair and the pores of the skin. This result in a cleaner and healthier skin which is less likely to become infested with skin parasites such as lice and mange mites. Good vigorous grooming massages the body muscles underneath the skin and thus improves their condition or fitness. Efficient grooming is possible only when you take personal pride in the appearance of your animal. The value of grooming depends upon the thoroughness and speed with which it is done. Scientifically, there is no published standard to be followed when we come to the grooming technique and its application. Sometimes, horses are groomed partially to save the human time and in other occasions, they are groomed completely. Hence, this study was undertaken to clarify the reflections of grooming issues on the body care behavioral activity in horses.

Materials and Methods

Animals and management program

Four horses (three females and one gelding, aged 3-14 years, 372-462 kg) were used in this study. The breeds of horses used all over the study were Thoroughbred. The horses were kept individually in box stall which floor was concrete (3.6 m x 3.5 m). They were turned out into a pasture from 08:30 to 16:00. Each horse received a pelleted concentrate, oat mixture and cut alfalfa hay as a maintenance ration.

A horse can be given a thorough grooming in about 15 minutes. The following grooming techniques and tools are applied as follows:

1. Gently remove dried mud with a rubber curry comb. This tool can also be used to clean brushes.

2. Use a rubberized glove with small, smooth, firm projections all over the body to stimulate the skin and remove dead hair.
3. Tidy the mane and tail with a long bristled stiff brush or metal toothed comb.
4. Brush the horse with a short bristled, soft brush, wiping it periodically on a damp towel to remove dirt.
5. Stable rubber or towel: For removing stains or for a final polish after grooming. Also good for rubbing out sweat marks.
6. Give the horse a final wipeout with the damp towel including eyes and nostrils.
7. Clean out the feet with a hoof pick.
8. Sometimes, partial grooming reluctantly occurred by a care taker in the morning. Partial grooming was done by cleaning the hind quarters of horses without brushing the body. Also, there was no wiping out or cleaning the hoof.

Behavioral observations

The studied behavioral parameters were as follows:

1. **Self grooming:** Horses scratched their head and neck with a hind limb, scratching or biting the fore limb or hind limb with the teeth (5).
2. **Mutual grooming:** At pasture, pairs of horses may spend quite lengthy periods in mutual grooming. In the normal grooming position, two horses face each other; one extend its head past the side of the other's neck and nibbles vigorously over the latter's saddle region (4, 11 and 6).
3. **Social grooming:** In social animals like horses, social grooming is an activity in which individuals (more than two) in a group clean or maintain each other's body or appearance.
4. **Rolling:** Rolling is a behavior that may be related to coat care or general comfort behavior. It is the only way a single horse can rub the dorsal surface of the body. In order to roll, the horse will first lower his head, sniff the ground, and often paw. Then he will flex all four limbs and sink to the ground to one side or the other. He may roll from side to side or remain on one side. If he doesn't roll to a second side, he may arise and lie down again with the second side down. When a normal healthy horse has rolled, he will shake, dislodging some of the soil that clings to his coat (4).

5. Rubbing: Horses rub their heads or their rumps and any inaccessible body parts against solid inanimate objects (7).

- The frequency and duration of the above mentioned elements were recorded daily for consecutive 6 days after either partial or complete grooming. Observations of these behavioral elements were recorded from 09:00 to 12:00 and from 13:00 to 16:00 by direct observation.
- During performing of the different elements of body care behavior, attention was paid to the targeted body parts in terms of frequency and duration of the behavioral activities.
- With regard to mutual grooming, the targeted area and was observed with the onset of this behavioral activity.

Data analysis

Values of self-grooming, mutual grooming, social grooming, rolling and rubbing for the partial and complete grooming was compared with a student paired *t*-test. A probability level of $P < 0.05$ was considered significant.

Results and Discussion

Table 1: Mean (\pm S.E.) frequency and duration of different body care behavioral elements after the partial and complete grooming.

Area	Frequency (no./day)		Duration (s/bout)	
	P.G	C.G	P.G	C.G
Self grooming	4.66 \pm 0.80 ^a	3.50 \pm 1.08 ^b	19.33 \pm 05.30 ^a	10.33 \pm 03.46 ^b
Mutual grooming	5.33 \pm 1.40 ^a	3.66 \pm 1.38 ^b	229.33 \pm 61.86 ^a	136.66 \pm 58.14 ^b
Social grooming	8.00 \pm 1.98 ^a	3.66 \pm 1.82 ^b	29.50 \pm 13.04 ^a	20.66 \pm 13.49 ^b
Rolling	3.16 \pm 0.60 ^a	2.00 \pm 0.73 ^b	151.66 \pm 31.85 ^a	45.00 \pm 15.05 ^b
Rubbing*	0.66 \pm 0.49 ^a	0.00 \pm 0.00 ^b	26.66 \pm 10.22 ^a	00.00 \pm 00.00 ^b

Each value represents the mean (\pm SE, n = 4). Different superscripts indicate significance at $P < 0.05$.

Table 2: Frequency of occurrence for the different body care behavioral activities during the observation period.

Behavior Pattern	Partial grooming						Complete grooming					
	H	N	S	T	HQ	Total	H	N	S	T	HQ	Total
Self gr.	0	1	19	7	1	28	0	0	9	12	0	21
Mutual gr.	0	3	9	17	4	33	0	0	5	11	6	22
Social gr.	1	3	0	7	37	48	4	1	2	5	9	21
Rolling	-	-	-	-	-	19	-	-	-	-	-	12
Rubbing	-	-	-	-	-	4	-	-	-	-	-	0

H = head; N = neck; S = shoulder; T = trunk; HQ = hind quarter

Table 3: Duration of occurrence for different body care behavioral activities during the observation period.

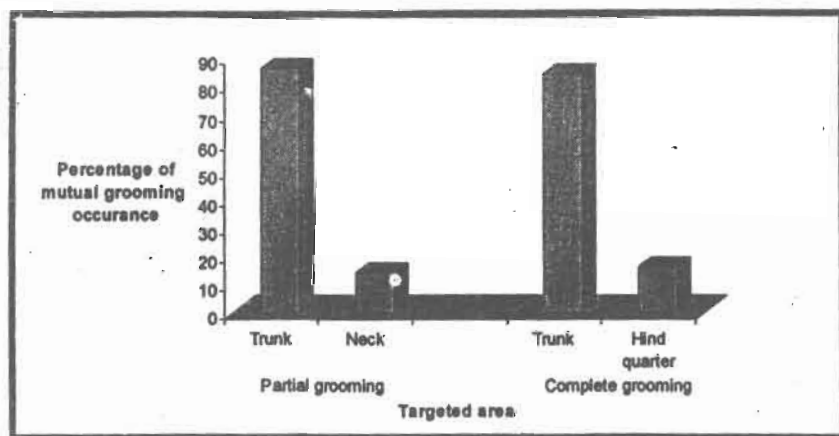
	Partial grooming						Complete grooming					
	H	N	S	T	HQ	Total	H	N	S	T	HQ	Total
Self gr.	0	2	90	19	5	116	0	0	29	33	0	62
Mutual gr.	0	186	230	900	139	1446	0	0	200	425	195	820
Social gr.	2	9	0	27	139	177	35	5	12	18	54	124
Rolling	-	-	-	-	-	910	-	-	-	-	-	270
Rubbing	-	-	-	-	-	160	-	-	-	-	-	0
Sum*	-	-	-	-	-	2809	-	-	-	-	-	1278

*sum means the total duration of time used for self, mutual, social grooming, rolling and rubbing.

H = head; N = neck; S = shoulder; T = trunk; HQ = hind quarter.

All elements of body care behavior decreased significantly ($P < 0.05$) after complete grooming of horses (Table 1). The highest frequency and duration of self grooming were concentrated on the shoulder and trunk regions after partial and complete grooming, respectively (Table 2 and 3). During partial grooming, the hind quarters were only groomed by the operator (caretaker), therefore self grooming was concentrated on the shoulder region than other parts. In fact, both shoulder and trunk regions can be accessed by the head of horses and at the same time, there will be great difficulty to scratch the other parts. Furthermore, rubbing against fences was performed by horses that groomed partially and disappeared completely after complete grooming (Table 2 and 3). This may clarify the efficiency of complete grooming to all body parts and in turn there will be no need to scratch them.

Figure 1: The targeted areas with the onset of mutual grooming in horses.



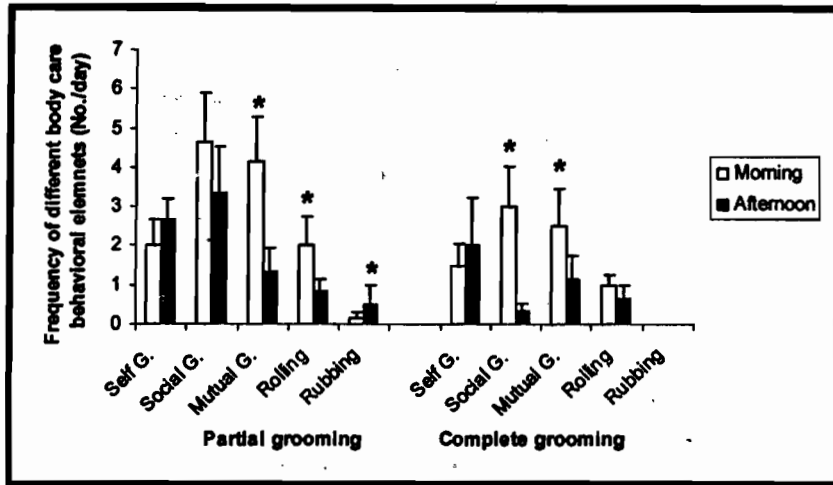
With the onset of mutual grooming, the most targeted area was the trunk after both partial and complete grooming of horses (Figure 1). As a matter of fact, mutual grooming of trunk enabled complete communication between couples either visually or physically. This form of communication could not occur during targeting areas rather than the trunk. The frequency and duration of mutual grooming concentrated on the trunk region after partial and complete grooming of horses (Table 2 and 3). In fact, after releasing of horses locked all the night at stalls, mutual grooming displayed between couple of horses. This reduces the social tension after being isolated individually all the night. Hence, they indulged in performing this

behavioral activity in order to strengthen the social bond between partners (Feh and Mazières, 1993).

With regard to the social grooming, more than 2 horses indulged in performing this behavioral activity in which individuals in a group clean or maintain each other's body or appearance. Hind quarters were the most targeted area after both partial and complete grooming (Table 2 and 3). All individuals in the group shared in grooming each other especially at the region of hind quarters. The occurrence of social grooming displayed more frequently after partial grooming of horses. This may be due to more accumulation of dirt on the hind quarter after grooming horses partially. To sum up, complete grooming helps removing the dirt from all regions of the body. Hence, the frequency and duration were less than that in partial grooming. Furthermore, social grooming is also used as a form of reconciliation and a mean of conflict resolution in between individuals. It is a major social activity, and a mean by which animals who live in proximity can bond and reinforce social structures, family links, and build relationships.

Concerning rolling of horses, the frequency and duration decreased significantly after complete grooming (Table 1). Of course, rolling needs more energy if displayed frequently thereby complete grooming is recommended to save the energy of horses and keep them clean all the time. From the previous results, total time spent in performing of body care behavioral activities decreased after complete grooming of horses (Table 3). However, after partial grooming a lot of time consumed in performing these activities to clean the neglected body parts.

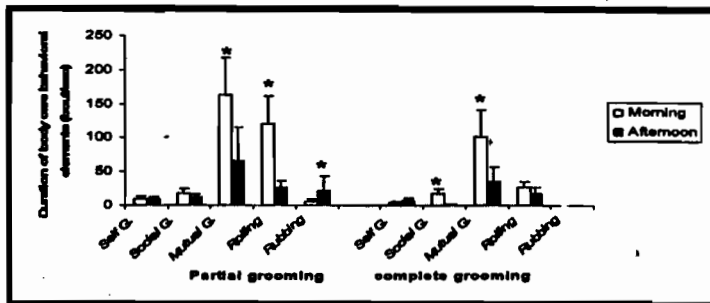
Figure 2: Frequency of different body care behavioral activities in the morning and afternoon after partial and complete grooming.



Morning means period between 8:30 to 12:00

Afternoon means period between 13:00 to 16:00

Figure 3: Duration of different body care behavioral activities in the morning and afternoon after partial and complete grooming.



Morning means period between 8:30 to 12:00

Afternoon means period between 13:00 to 16:00

From figure 2 and 3. It's clear that the frequency and duration of body care behavior activities varied from morning to afternoon. After partial and complete grooming, the released horses in the morning indulged in mutual and social grooming. Nevertheless, by performing of both mutual and social grooming, horses get rid of dirt accumulated at night. Moreover, they get engaged socially with their individual partners who were deprived from their contact. On the other hand, the frequency and duration of rolling increased in the morning than afternoon. At night, horses were also deprived completely from rolling as they were housed in stalls. Social grooming, mutual grooming and rolling could not be performed in the stall despite of the urgent need of horses for displaying them. Thus, after releasing in the morning horses were eager to display these favorable behavioral activities that result in complete relief either socially or physically. It is worth to mention that during social, mutual grooming and rolling, the inaccessible body parts are relieved through these activities. In the afternoon, after partial and complete grooming of horses, they indulged in self cleaning of themselves that concentrated in the accessible body parts. On the other hand, rubbing was only displayed after partial grooming of horses and disappeared completely after complete grooming. During rubbing, horses scratched the inaccessible parts against fences.

Eventually, it could be concluded that complete grooming of horses in the morning leads to saving the energy that could be spent in displaying of more body care behavioral activities. Furthermore, this leads to time saving that could be spent in displaying of other beneficial behavioral activities for this graceful creatures like exercise, grazing and playing. In addition, complete grooming decreases scratching of the body parts against objects which in turn lowers the probable occurrence of injures.

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إنعكاسات ممارسات التطمير على سلوك العناية بالجسم فى الخيول

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الملخص العربى

قد تم استخدام مجموعة من الخيول لدراسة إنعكاسات ممارسات التطمير على سلوك العناية بالجسم فى الخيول. ولذلك تمت المقارنة بين الوقت المستخدم و معدل التكرار بعد القيام بتطمير الخيول فى الصباح تطميرا جزئيا أو تطميرا كليا على سلوك العناية بالجسم و الذى يشمل نمط التطمير الذاتى ونمط التطمير المتبادل بين إثنين من الخيول و نمط التطمير الإجتماعى بين مجموعة من الخيول(أكثر من إثنين) و نمط الدوران على الأرض و نمط إحتكاك الجسم بالأسوار الحديدية المحيطة بالملاعب و أسفرت نتائج البحث عن الآتى:

- 1- نقصان معنوى فى الوقت المستخدم و معدل التكرار فى كل أنماط سلوك العناية بالجسم بعد القيام بتطمير الخيول فى الصباح تطميرا كليا.
- 2- بعد القيام بتطمير الخيول فى الصباح تطميرا جزئيا أو تطميرا كليا كانت منطقة الكتف و منطقة الجزع من أكثر المناطق إستهدافا فى نمط التطمير الذاتى على التوالي.
- 3- بعد القيام بتطمير الخيول فى الصباح تطميرا جزئيا أو تطميرا كليا كانت منطقة الجزع من أكثر المناطق إستهدافا فى نمط التطمير المتبادل على السواء.
- 4- بعد القيام بتطمير الخيول فى الصباح تطميرا جزئيا أو تطميرا كليا كانت منطقة الأرباع الخلفية من أكثر المناطق إستهدافا فى نمط التطمير الإجتماعى على السواء.
- 5- قل معنويا نمط الدوران إحتكاكا بالأرض بعد القيام بالتطمير الكلى فى الخيول.