

# Accepted Manuscript

Effects of a light colored cotton rug use on horse thermoregulation and behavior indicators of stress

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PII: S1558-7878(18)30013-3

DOI: [10.1016/j.jveb.2018.03.003](https://doi.org/10.1016/j.jveb.2018.03.003)

Reference: JVEB 1125

To appear in: *Journal of Veterinary Behavior*

Received Date: 17 January 2018

Revised Date: 13 February 2018

Accepted Date: 7 March 2018

Please cite this article as: Padalino, B., Loy, J., Hawson, L., Randle, H., Effects of a light colored cotton rug use on horse thermoregulation and behavior indicators of stress, *Journal of Veterinary Behavior* (2018), doi: 10.1016/j.jveb.2018.03.003.

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1 **Effects of a light colored cotton rug use on horse thermoregulation and behavior**  
2 **indicators of stress**

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10 **Abstract**

11 When environmental temperatures exceed 25°C horses are potentially subject to thermal  
12 stress. It has therefore been recommended that horses should be provided with shade  
13 during hot days. However this is not possible for horses grazing on many Australian rural  
14 properties. While the positive effect that solar radiation blocking can have on reducing heat  
15 absorption is understood by some, conflicting views, mostly anecdotal, exist on the use of a  
16 light cotton rug on horses for this purpose. The aim of this pilot study was to examine the  
17 effects of wearing a light colored cotton rug on horse heart rate (HR), respiratory rate (RR),  
18 rectal temperature (RT), sweat production and selected stress-related behaviors. Data were  
19 collected for two groups of University owned horses (n=8 and 10 respectively). The horses  
20 were tied in an outdoor arena in direct sunlight for two hours on two different days (D1,  
21 D2). Baseline behavioral and physiological data (T0) were noted, recording frequency  
22 (n/10min) of tail swishing, licking-chewing, pawing, repeated head movements and self-care  
23 and recording HR, RR, RT and sweat production using a sweat score (0=none to  
24 5=excessive). Half of the horses were then fitted with a light cotton rug and all horses  
25 observed and monitored at regular 15 minute intervals for a further two hours (T1-T8). The  
26 effect of repetition (D1, D2) and time (T0-T8) was not significant, therefore the data were  
27 combined and analysed using the Mann-Whitney U-test with rug (rugged/unrugged) as the  
28 Independent Variable. RT and sweat score were significantly lower in unrugged horses  
29 compared to rugged horses ( $37.4 \pm 0.3$  vs  $37.7 \pm 0.3$  °C;  $0.5 \pm 0.8$  vs  $1.9 \pm 1.3$ , respectively;  
30  $P < 0.001$ ). However unrugged horses showed a significantly higher frequency of tail swishing  
31 and pawing ( $23.1 \pm 25.9$  vs  $8.7 \pm 11.0$  n/10min;  $P < 0.001$ ;  $9.4 \pm 21.2$  vs  $5.8 \pm 17.4$  n/10min;  
32  $P = 0.018$ ). Even though wearing a rug did not have an effect on the other parameters, it is

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