

Associations between preventive hoof trimming, activity and resting behaviors

G. Stoddard, BS; G. Cramer, DVM, DVSc

Veterinary Population Medicine, University of Minnesota, St. Paul, MN 55108

Introduction

Hoof trimming (HT) is a common procedure used to prevent and treat lameness, one of the most important economic and animal welfare diseases in the dairy industry. There is a paucity of research on the effects hoof trimming has on the 3 components of animal welfare: biological function, behavior, and affective states. Current behavioral research suggests hoof trimming causes a decrease in activity, an increase in resting time, and conflicting effects on locomotion. Unfortunately, in these studies, lame animals were included, and this limits the conclusion that can be made on the effect routine HT has on non-lame animals. It is important to evaluate lame and non-lame animals separately because lame animals are already displaying abnormal behavior. Determining the effect of routine hoof trimming on non-lame animals will increase animal health and welfare for dairy cattle by guiding future evaluations of routine HT techniques and HT strategies. The objective of this research was to determine the association between HT and activity and resting behaviors for non-lame cows.

Materials and Methods

A convenience sample of 2 farms from the UK and 2 farms from Canada were recruited to participate in this study. Selection criteria required that farms used free-stall housing, have a regular hoof trimming schedule, and use either Afi Pedometer or AfiACT2 (Afirmilk, Ltd.) pedometers. Activity, milk yield, resting time, and resting bout information was collected daily at the time of milking. Hoof trimming data was collected from on-farm records. The association between activity, resting behaviors, and HT was evaluated by

comparing the averages of the behavior parameter at different time points before and after HT. Time periods evaluated included: 1 to 10 days before HT; day of HT; day after HT; 2 to 3, 4 to 7, and 8 to 10 days after HT. Models were created using linear regression with behavior as the outcome variable and included the fixed effects of farm, lactation number, milk yield and days-in-milk. Time period was forced into each model and a robust standard error was used to account for repeated measures.

Results

A total of 1,393 cows were used in the analysis with average days-in-milk, lactation, and milk yield being 182 d, 1.9 lactations, and 73.9 lb (33.6 kg), respectively. Activity and resting bouts were associated with every time period except for on the day after HT. Resting time was positively associated with all time periods after HT. Resting time increased from 21 to 27 minutes/day between 1 to 10 days after HT. Activity between 2 to 10 days after HT decreased by a minimum of 20 steps/hour and reached a maximum decrease of 27 steps/hour. Resting bouts increased from 0.2 to 0.4 bouts between 2 to 10 days after HT.

Significance

These results show that the HT process is associated with changes in activity, resting time, and resting bouts of the cow during the 10 days following HT. This indicates that there is an adjustment phase either due to the actual HT or due to the disruption of the cow's daily routine during the HT process.