Soft, High-Friction Flooring Improves Gait of Cows With and Without Sole Ulcers

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We studied dairy cows (n = 30) walking on concrete and on a soft, high-friction rubber surface to examine how flooring influenced gait and how this differed for cows with hoof lesions. Cows were hoof-trimmed 9 wk after the trial and were classified as either with or without sole ulcers. Video recordings of the cows while walking were digitized using motion analysis software to calculate stride variables (length, height, overlap, duration, proportion of triple support, and speed). Gait was scored using a 5-point scoring system (1 = sound to 5 = severely lame) and 7 individual behaviours were scored on continuous scales.

Cows with sole ulcers walking on a composite rubber surface had longer strides (156.9 vs. 149.6 ± 2.6 cm), higher stride height (9.7 vs. 8.8 ± 0.3 cm), more stride overlap (0.4 vs. -4.3 ± 2.0 cm), shorter periods of triple support (3 legs in ground contact; 68.6 vs. 73.8 ± 2.0 %), walked faster (1.22 vs. 1.17 ± 0.04 m/s) and had lower overall gait scores (2.9 vs. 3.1 ± 0.1), better tracking-up (19 vs. 24 ± 2), better joint flexion(29 vs. 33 ± 2), more symmetric steps (31 vs. 36 ± 3), and less reluctance to bear weight on their legs (12 vs.16 ± 2) compared to walking on concrete. Similar results were found for cows without sole ulcers.

Cows with higher gait scores (more severe lameness) showed the greatest improvement when walking on the rubber surface in stride length (r = -0.51), triple support (r = 0.59), swing duration (r = -0.44), overall gait score (r = 0.46), and reluctance to bear weight (r = 0.66) than cows with lower gait scores.

Implications: These results indicate that rubber flooring provides a more secure footing and is more comfortable to walk on, especially for lame cattle.