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Article

Effects of Milking on Dairy Cow Gait

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Abstract

We studied cows with (nÂ =Â 6) and without (nÂ =Â 26) sole ulcers before and after milking to explore how milking influences dairy cattle gait and how this differs for cows with hoof injuries. Video recordings of cows were digitized using motion-analysis software to calculate stride variables for each hoof. Gait was scored using a 1-to-5 numerical rating system (1 = sound, 5 = severely lame) and a continuous 100-unit visual analog scale of gait attributes (back arch, head bob, tracking-up, and reluctance to bear weight). For cows with and without sole ulcers, differences in gait before and after milking were evident; after milking, all cows had significantly longer strides (123.3 vs. 133.5Â Â±Â 2.0Â cm, respectively), higher stride height (8.3 vs. 8.9Â Â±Â 0.1Â cm), shorter stride durations (1.49 vs. 1.41Â Â±Â 0.03Â s), walked faster (0.85 vs. 0.97Â Â±Â 0.03 m/s), and had shorter periods of triple support (3 legs in ground contact; 80.0 vs. 71.7Â Â±Â 2.0%). Tracking-up and reluctance to bear weight improved after milking (20 vs. 16Â Â±Â 2; 20 vs. 15Â Â±Â 1, respectively), but numerical rating scores and back arch did not. Cows with sole ulcers walked differently than cows without for all

measures, except swing duration, both before and after milking. Interactions between hoof health and milking were found for swing duration and head bob but when tested separately, the only effect was that cows without sole ulcers had longer swing durations before milking (0.45 vs. 0.44Â Â±Â 0.01Â s, respectively). Gait differences were probably due to udder distention and motivation to return to the home pen. Our results suggest that the most suitable time to assess lameness is after milking when differences between cows with and without ulcers are most evident.

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Key words

cattle; gait; sole ulcer; milking

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