

Effect of cow factors and daily walking distance on commonly used lameness indicators

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Lameness is a problem on modern dairy farms



Farm expences 

Animal welfare 



Lameness detection is a problem

Commonly used subjective lameness scoring methods are:

- Laborous
- Unreliable



Connection to actual
hoof lesions is unclear

Factors unrelated to
lameness can affect
locomotion

We investigated the effect of cow factors on frequently used lameness indicators, and the connection between daily walking distance and these indicators

Materials and methods

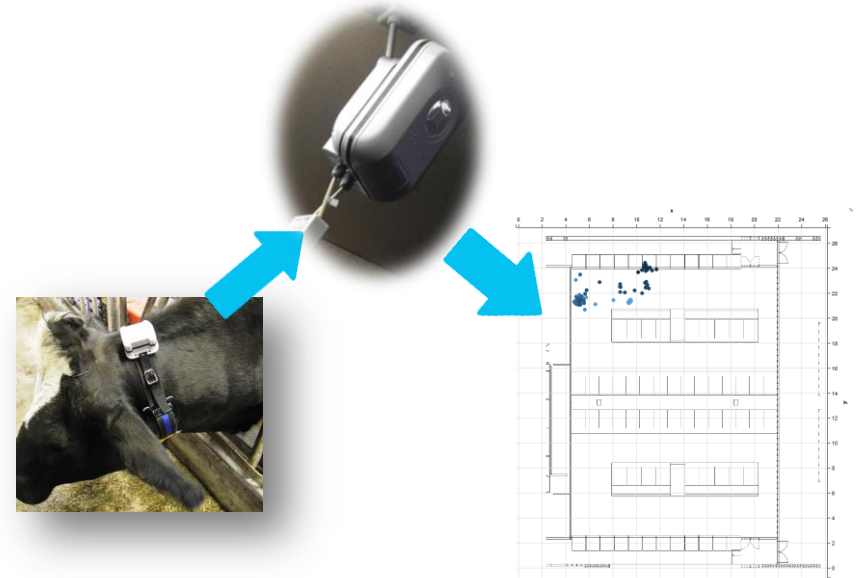
In total of 72 cows, 48 at a time → 7-month study
(0.5 – 7 months/cow)

- Parity 1 – 6
- Two breeds: 42 Holstein-Friesians, 30 Nordic Reds
- Days in milk $173,3 \pm 86,4$ (mean \pm SD)
- Milk production $29,3 \pm 5,7$ kg/day (mean \pm SD)

Materials and methods

Locomotion scoring

- Every two weeks
- Total of 16 times
- 4-scale scoring system based on the indicators of lameness



Ubisense real time location system

Daily walking distance

Overall locomotion score

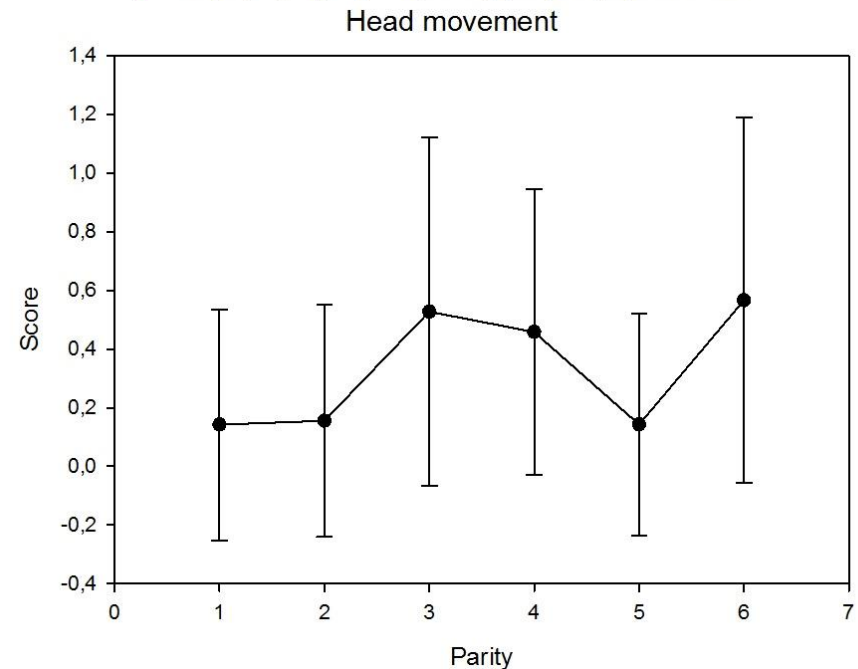
| Locomotion score | Percentage of cows | Breed | Percentage of cows |
|------------------|--------------------|-------------------|--------------------|
| 0 | 6.5 % | Nordic Red | 4.0 % |
| | | Holstein-Friesian | 8.0 % |
| 1 | 23.0 % | Nordic Red | 26.0 % |
| | | Holstein-Friesian | 20.8 % |
| 2 | 53.0 % | Nordic Red | 56.0 % |
| | | Holstein-Friesian | 50.4 % |
| 3 | 18.0 % | Nordic Red | 14.0 % |
| | | Holstein-Friesian | 20.8 % |

Parity

Higher parity, higher score in:

- Tender placement of the hooves
- Back arch
- Reduced speed
- Irregularity in the timing of the hoof placement
- Irregularity in the location of the hoof placement
- Abduction
- Head movement

→ Aging itself may affect the locomotion, but it is also possible that older cows have more claw disorders



Breed

Holstein-Friesian:

Abduction

Irregularity in the location of the hoof placement



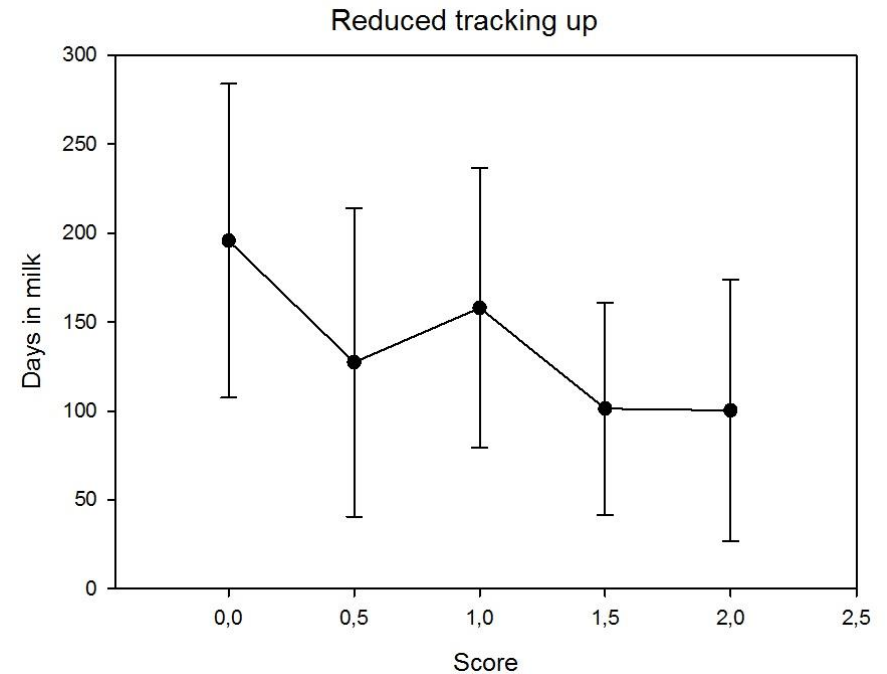
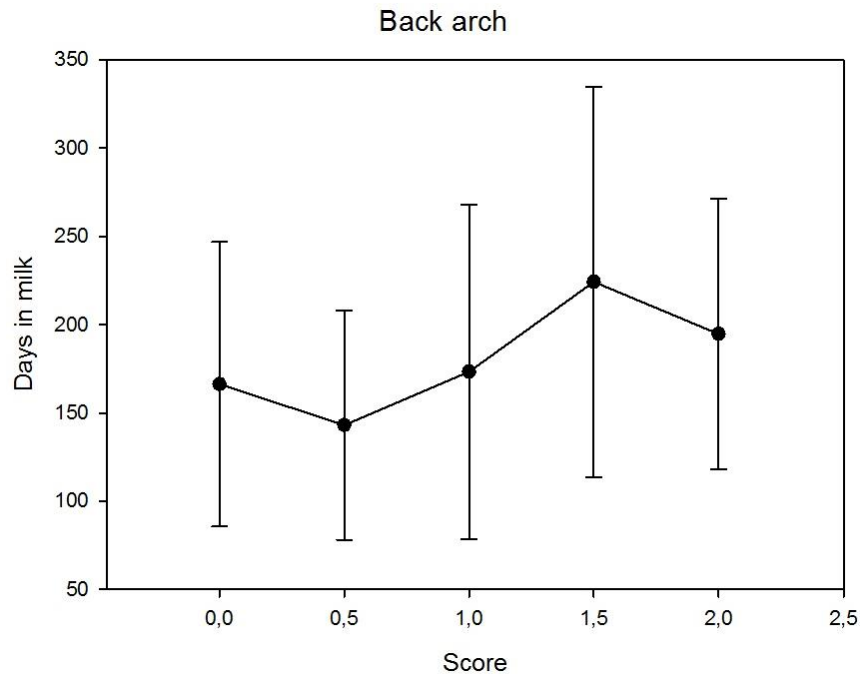
Nordic Red:

Reduced tracking up



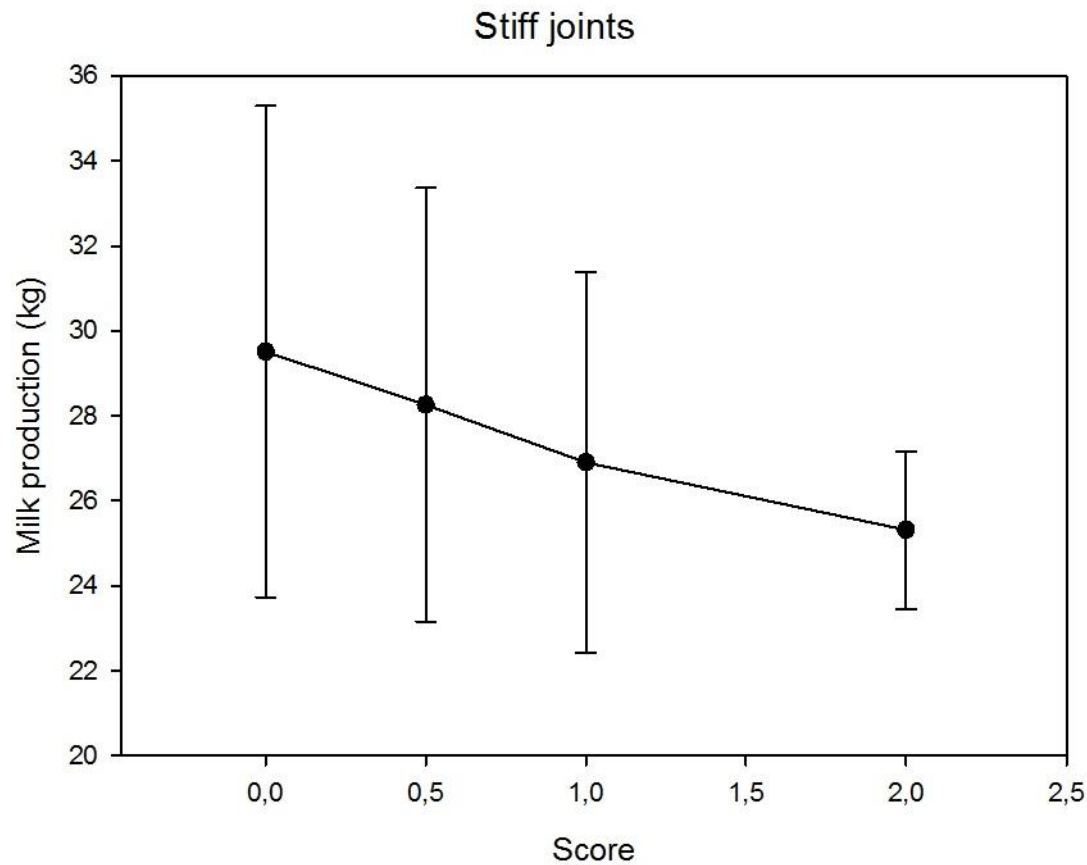
→ It is possible that some of the differences are due to anatomical differences in two breeds

Lactation stage

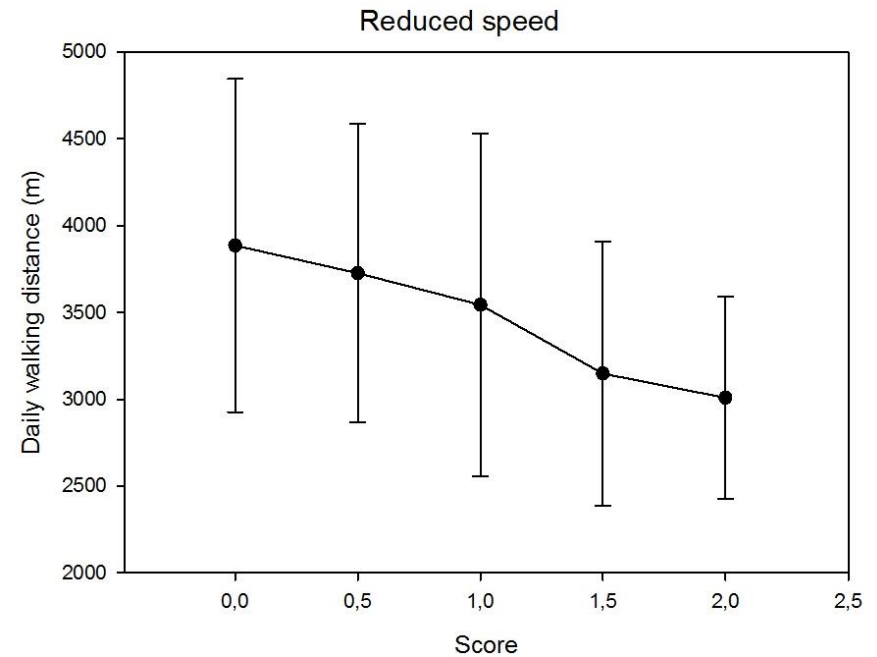
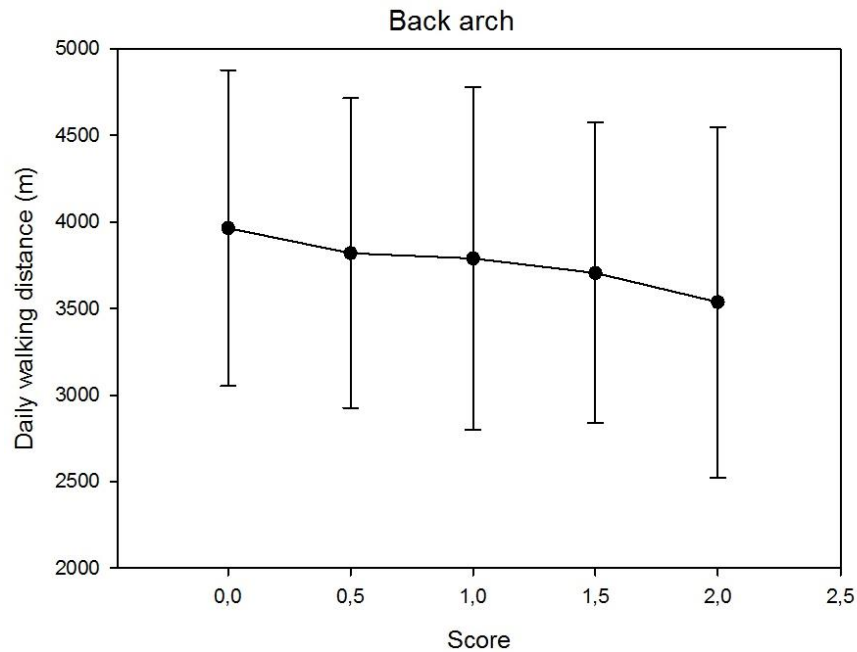


→ Larger udder in early lactation
may hinder the hind leg movement

Milk production



Daily walking distance



Conclusion

There was a connection between locomotion score and investigated cow factors.

However, in this study the cause of lameness was not inspected

→ Locomotion score may be affected both by lameness and cow factors



