

Lying time of dairy cows does not increase linearly throughout lactation

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Lying time of dairy cows changes with lactation stage, and most authors report an increase in lying time from early to mid and mid to late lactation. Detailed measurements throughout lactation are often lacking however, which could mean that we are missing part of the picture. Data from 366 cows during 466 lactations were therefore used to derive a curve of lying time relative to days in milk. The cows were part of four large commercial Danish Holstein herds that were equipped with IceTags from 2008 to 2009. In total 53,653 days of data were collected between 0 and 305 days in milk. Lying time decreased dramatically during early lactation to reach a minimum around four weeks after calving. Only after this initial decrease, lying time increased steadily and stabilized towards the end of lactation. Wilmink's function for lactation curves was adapted to fit a model on to this data. Lying time was traded in exchange for standing time and not for walking time. Whether this was mainly standing while feeding (so a trade-off with feeding time) or idle standing (which could indicate discomfort during lying or long time waiting to be milked) or a combination is not known. The similarity of the lying time curve with a reversed lactation curve is striking, but more data is needed to verify whether or not there is a strong relationship between the curves (and between the minimum in lying time and the peak in milk yield) in a group of cows. Besides milk yield, a curve of feeding time would add to the understanding of the lying time. Similar curves were derived for motion index per minute walking and step frequency during walking [steps/min] and these showed a similar pattern related to stage of lactation. To conclude, this topic requires extra attention in future research on dairy cow welfare to pin-point what makes dairy cows change their lying time and step frequency throughout lactation (time budget, udder pain, pregnancy stage, etc.), and what effects this change in lying behavior could have on cow performance and welfare.

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