Using activity meters to monitor cow health

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In line with the ongoing trend of growing herd sizes, dairy farmers increasingly adopt automation and precision livestock farming (PLF) technologies. These technologies aim to help farmers take care of more animals without increasing labour input. From an economic point of view PLF technologies can help improve daily farm management decisions and, thus, farm profitability. From a social point of view, the knowledge that the herd is under continuous surveillance has been indicated by farmers as being highly valuable. One of the most studied and successful PLF technologies is automated heat detection on dairy farms. The majority of these detection systems use deviations in activity as indicator for an upcoming heat event. With the sensitivity and positive predictive value both being approximately 80%, these detection systems demonstrated to be fairly accurate in doing their job. Moreover, when alerting for cows in heat, the associated management action (inseminate this cow) is very clear for farmers. This combination of a good detection performance and clear management action explains why already around 20% of Dutch dairy farmers adopted this technology. Since deviations in activity have been associated with other health issues as well, investment in these activity monitoring systems may have more benefits than just aid in heat detection. Lame cows, for instance, have a significantly different activity pattern than their non-lame herd mates. A first attempt to use activity to predict lameness proved to be more difficult: only 25% of the lame cows were detected. However, adding other sensor information that was readily available (milking order and live weight) doubled this sensitivity, demonstrating that there is potential to use activity for other purposes than just heat detection. However, to make this become reality there are still challenges to overcome. These challenges include studying potential benefits of investing in activity meters for monitoring cow health, methods to use activity data in combination with other sensor information for detecting other health issues, and the development of standard operating procedures to link an activity alert with management actions to improve the utilization of these activity meters on-farm.