



# Early post-partum physical activity and estrous expression and their association with ovulation rate and fertility in lactating dairy cows



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The use of automated activity monitor technology may be used to retrieve useful data regarding estrus behaviour such as early post-partum activity that may be able to indicate cyclicity and health of lactating dairy cattle.

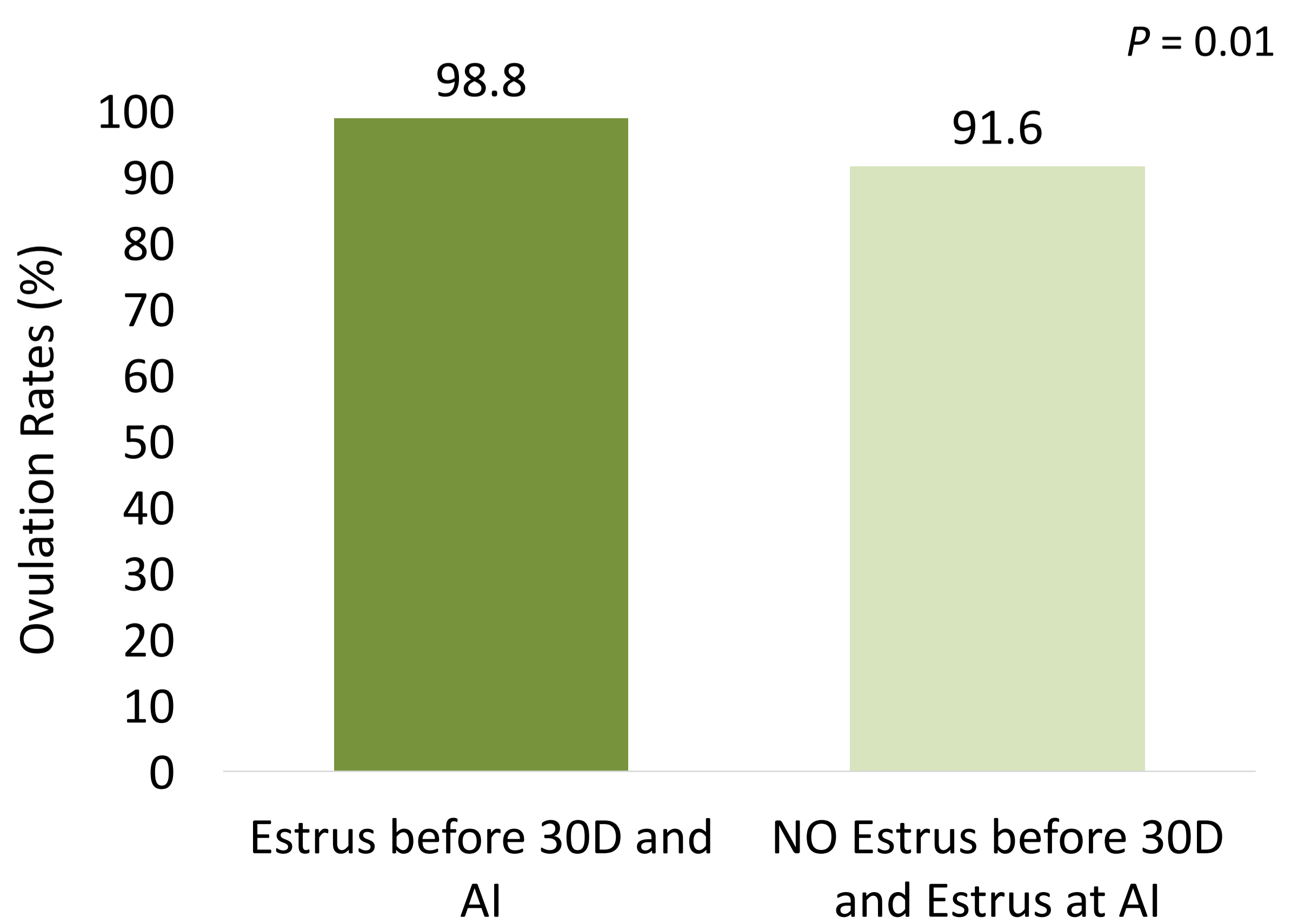
## Objectives

The aim of this study was to evaluate the associations between physical activity alerts at two moments (before 30 DIM and at first artificial insemination) on ovulation rate and pregnancy per AI (P/AI).

## Methodology

- 436 Holstein cows (45.8 ± 8.2 kg/day; 66.5 ± 6.5 DIM)
- Calving difficulty was recorded at parturition
- Endometritis was diagnosed at 30 ± 2 DIM
- First inseminations postpartum were carried out using a timed AI protocol based on E2/P4
- Estrous expression was measured using a leg-mounted pedometer (Afitag™, AfiMilk®). Cows were determined as having an estrus alert when their activity increased 100% relative to baseline
- Ovaries were scanned at 10 d post-AI to check for ovulation
- Data was analyzed using MIXED and GLIMMIX procedures of SAS

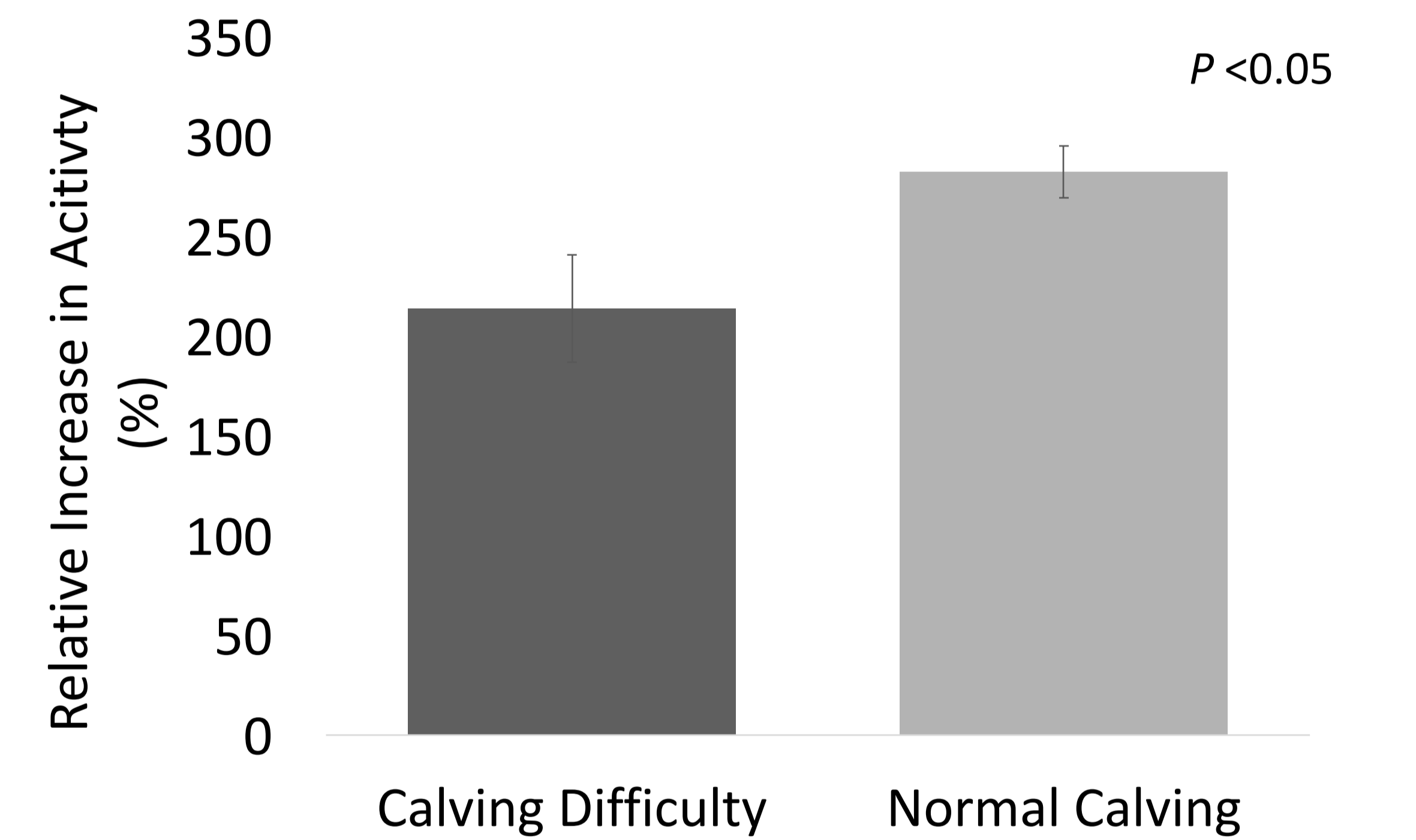
Animals having estrus alerts both at AI and before 30 DIM had higher ovulation rates at first postpartum AI



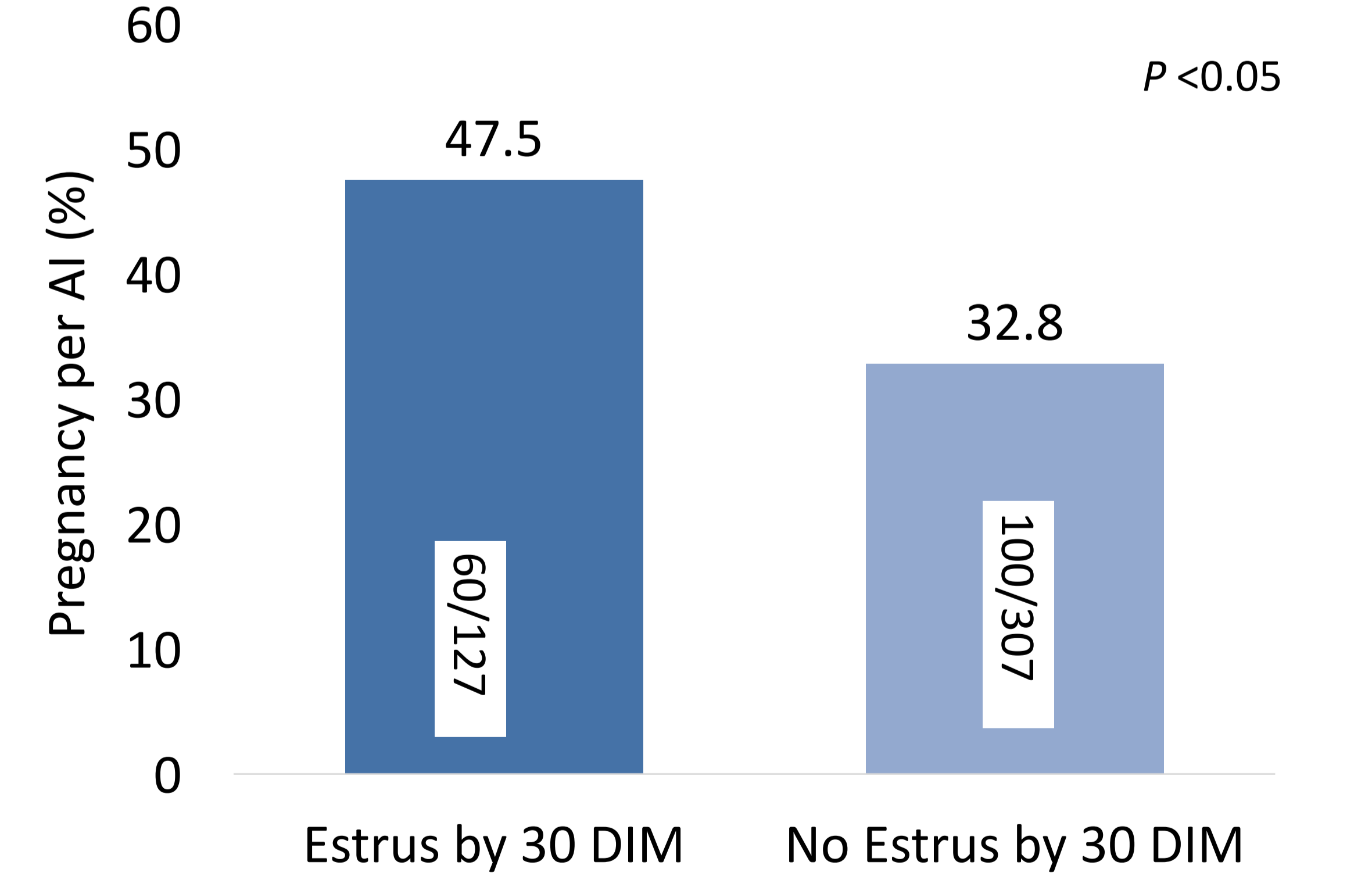
## Uterine health and calving difficulty reduced the occurrence of estrus activity early postpartum

71.1% of the animals with difficulty calving did not show an estrus alert before 30 DIM

Animals with calving difficulty had reduced early postpartum estrous expression

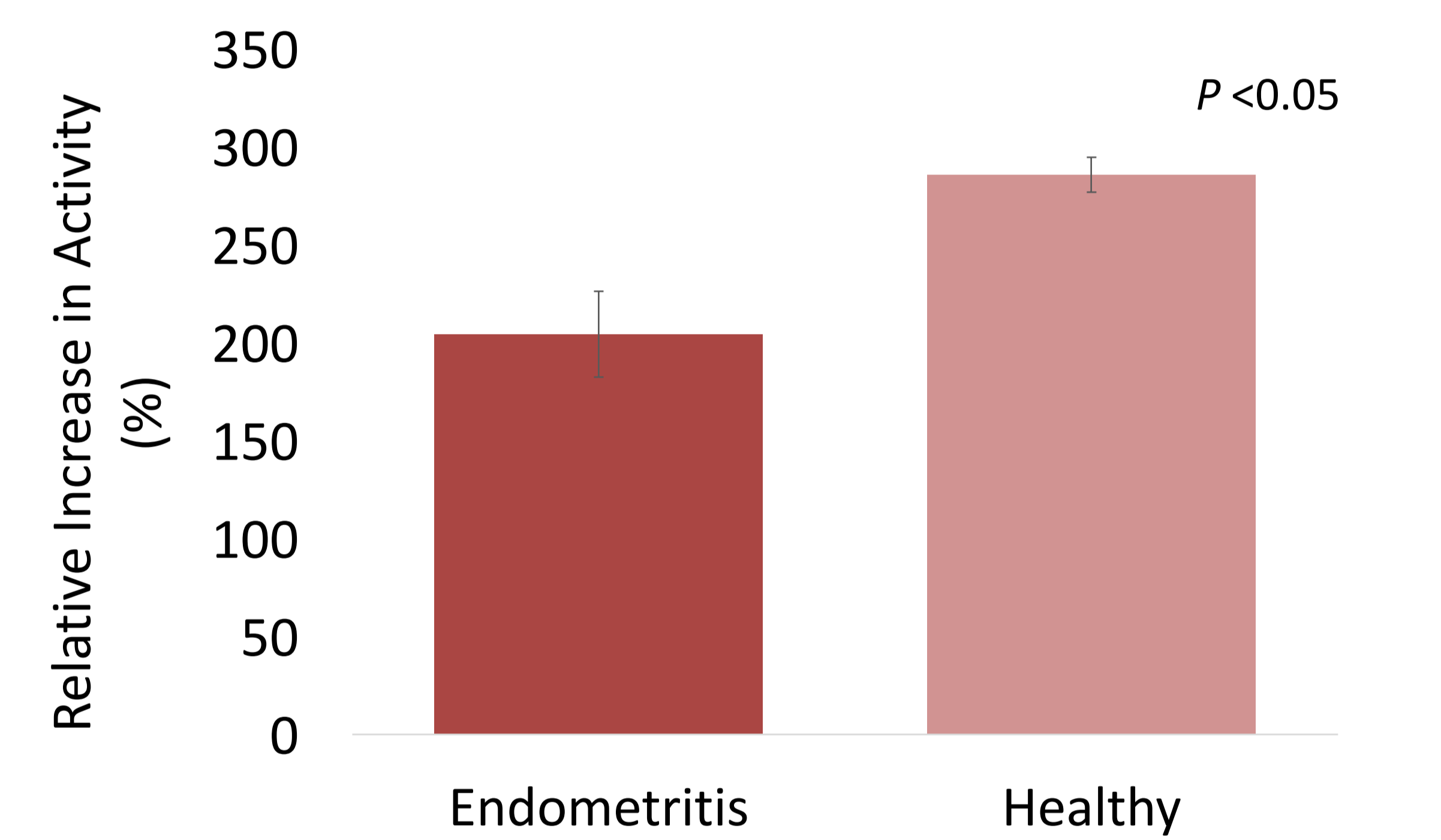


Animals having at least one estrus alert early postpartum had higher fertility at first postpartum AI

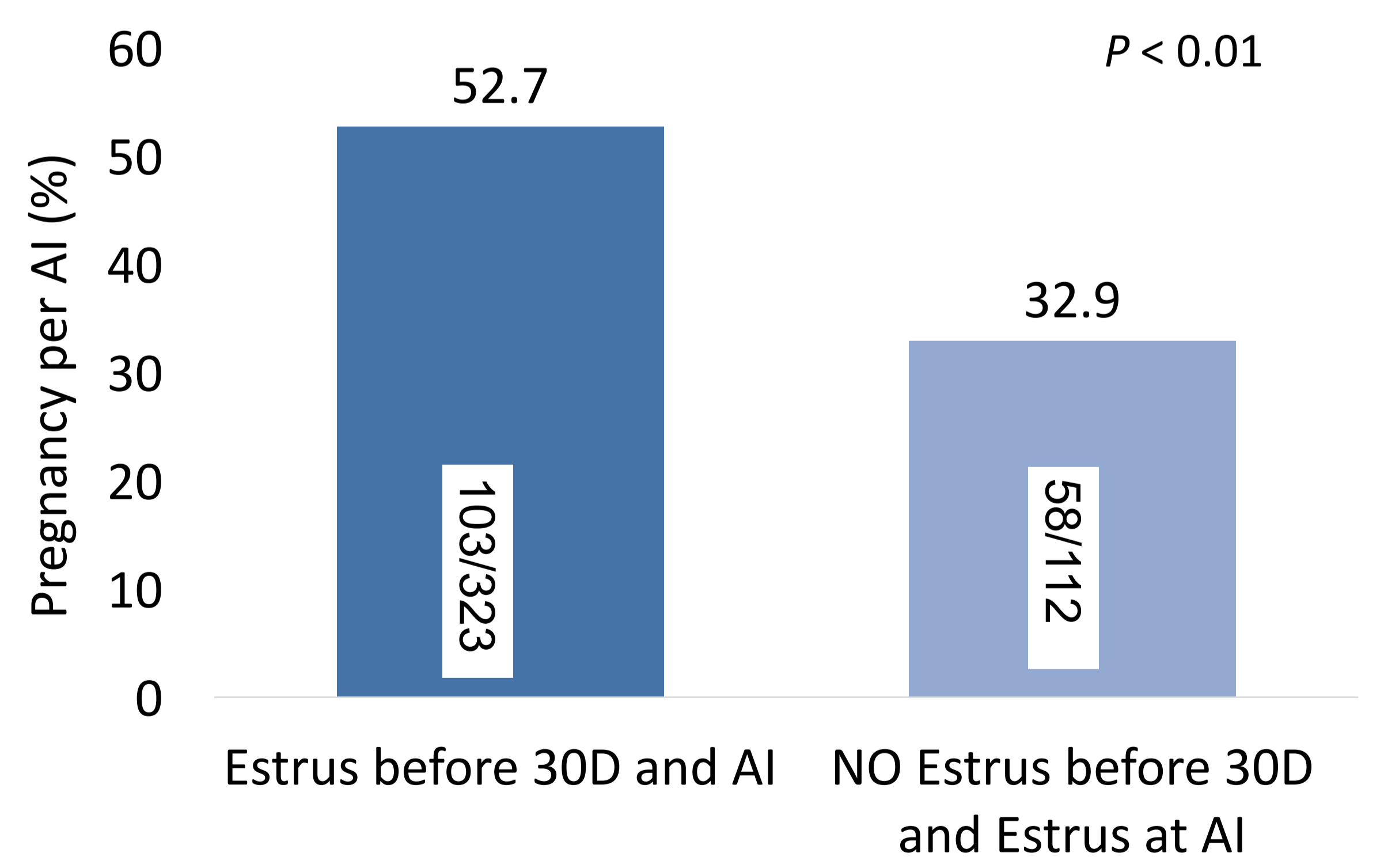


74.7% of animals with endometritis did not show an estrus alert before 30 DIM

Animals with endometritis had reduced early postpartum estrous expression



Animals having estrus alerts both at AI and before 30 DIM had higher fertility at first postpartum AI



## Conclusions

- The occurrence of estrus alerts before 30 DIM and at AI improved fertility and ovulation rates.
- Improvement in fertility and estrous expression observed in association with early post-partum estrus supports the potential application of automated activity data towards reproductive management and for evaluation of return to cyclicity.

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