The Impact of Providing Periodic Exercise on the Welfare of Stall-Housed Gestating Sows

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BACKGROUND

The 2014 Canadian Code of Practice for the Care and Handling of Pigs proposed that as of:

- July 2024: existing stall barns may continue to operate if mated gilts and sows are given opportunities for greater freedom of movement.
- The public comment period on this proposition ended on November 19, 2020.
- Whether providing sows with periodic exercise brings any benefits to sow welfare, through reducing stress of closed confinement and improving comfort, remains unknown.

MATERIALS AND METHODS

- Determine the effects of low-level periodic exercise in stall-housed gestating sows on sow welfare through evaluation of sow behaviour and piglet stress response.

OBJECTIVE

Animals: breed sows (n=180, parity 0-7).

Treatments:
- Control (C): Sows stall-housed throughout gestation,
- Exercise (E): Stall-housed sows given exercise (10 mins walking around gestation room) once per week,
- Group (G): Sows housed in groups from insemination to farrowing.

Measures:
- Sow behaviour:
  - Recorded in early (week 2), mid (week 10) and late (week 15) gestation, on the days of exercise.
  - Postures (lying, standing, sitting):
    - Recorded every 10 mins for 2 hrs before exercise (AM) and for 1.5 hrs post exercise (PM).
- Stereotypes:
  - Live scored at 2-min intervals for 1 hr in AM and PM.

Prenatal stress measures:
- Female piglets (n=168 from 17 C sows, 20 E sows and 20 G sows) underwent novelty and isolation tests on day 19-22 after birth.

RESULTS

Fig. 1. Relative frequency (mean±SEM) of lying and sitting in AM for sows stall-housed throughout the gestation (Control, n=53), stall-housed sows exercised for 10 minutes once per week (Exercise, n=56) and sows housed in groups from insemination to farrowing (Group, n=58). Brackets connect treatments with significant differences. * P<0.05.

- In AM, G sows lay 27% more and sat 33% less, than C and E sows, which did not differ (P>0.05; Fig. 1).
- In PM, E sows sat more than C and G sows, and C sows sat twice as much as G sows (C: 0.08±0.01, E: 0.12±0.01, G: 0.04±0.01, P<0.05).

Fig. 2. Relative frequency (mean±SEM) of performing stereotypies in AM for sows stall-housed throughout the gestation (Control, n=53), stall-housed sows exercised for 10 minutes once per week (Exercise, n=56) and sows housed in groups from insemination to farrowing (Group, n=58) in early, mid and late gestation. Brackets connect treatments with significant differences. * P <0.05; T: Tendency, P= 0.05.

- In early gestation, G sows performed 20% fewer stereotypies than E sows, with C sows being intermediate (P<0.05).
- In mid gestation, G sows performed 33% fewer stereotypies than C and E sows, which did not differ (P>0.05; Fig. 2).

Piglet testing:
- Control piglets responded to a novelty test with 27% higher activity than E and G piglets, which did not differ (C: 23.10±2.21, E: 17.64±2.17, G: 18.67±2.16, P<0.05).

DISCUSSION

- Periodic exercise did not improve sow comfort (as indicated by postures) and did not reduce the stress coping response (as indicated by stereotypy performance), in comparison to stall housing throughout gestation.
- Sows in group housing demonstrated behaviours indicative of greater comfort and reduced stress.
- Piglet responses indicate that the lack of access to greater freedom of movement in stall-housed sows resulted in a more proactive stress response in offspring.

CONCLUSIONS /TAKE HOME MESSAGE

- Providing periodic exercise for 10 mins once per week does not produce measurable benefits for sow welfare, but does influence the stress coping response in offspring.
- Periodic exercising is not advisable, given the low returns for sow welfare, and converting to group housing is a preferable option for providing a greater freedom of movement, based on our results.

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