

Behavior and Performance of Pigs Previously Housed in Large Groups

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With development of sow group-housing, more and more breeding sows are housed in groups. The benefits and challenges of group-housing to sow welfare and performance have been addressed extensively in research. In contrast, effects of sow group-housing on performance and welfare of offspring are not well documented. Pigs born to group-housed lactating sows usually mingle into large groups of 50-100 at 10 days of age, with presence of their mother. The pigs usually remain in large groups until 50 lbs when they are moved to either confinement or hoop barns for finishing. It is not clear how large group sizes during the early stage of life affect development of social behavior and performance of pigs.

As pigs have evolved in small groups, usually less than 30 pigs, large group sizes challenge their social behavior. In small groups of pigs, dominant relationships are the basic social organization. These relationships are formed by initial contests among the group members. To maintain the dominant relations, pigs need to recognize group members and remember the outcome of the initial contests. As there are too many group members in large groups, which may exceed the limit that pigs can recognize or remember, stable dominant organizations cannot be maintained as in small groups. Unstable social organizations can cause social stress, and consequently result in reduced growth performance. Previous studies have indicated that on average, growth rate is reduced by 5% for grower pigs in large groups of 100, compared with in groups of 20. Researchers noted that pigs housed in large groups are more tolerant of each other because they have compromised individual recognition compared with pigs housed in small groups. It is not clear what the carryover effect of large group size on behavior and performance of pigs. The objectives of the current study were to evaluate the effects of large group size during lactation on behavior and performance of pigs when they are regrouped into small groups for finishing.

A total of 180 pigs at 8 wk of age (average weight = 50 lb) were used in the study. The pigs were born to 24 litters in three, group-farrowing rooms where they mingled in large groups of 66 to 80 pigs from 10 d of age. To test whether pigs derived from large groups can differentiate pen mates from non-pen mates, and whether weight variation can facilitate individual recognition, pigs were regrouped based on familiarity and weight variation. Familiar groups consisted of pigs from one farrowing room, and unfamiliar groups consisted of three pigs from each of the three farrowing rooms. Uniform weight groups were formed by using the middle 50% of the pigs, and variable weight groups were formed by using the heaviest 25% of the pigs and lightest 25% of the pigs. Five pens of 9 pigs (5 males and 4 females) were allotted to each of the four treatment combinations in a confinement grow-finish barn. Aggression and activity behavior were directly observed for 4 hours during the first three days, on day 7 and day 14 after regrouping. Injury scores were assessed on all pigs before and 48 hours after regrouping. Weight gain and feed intake were measured every two weeks. The study was concluded when the average weight of the pigs reached 231lb at 22 wk of age.

The results indicated that aggression in familiar groups was minimal throughout the observation periods. Compared with familiar groups, total duration of fighting was higher in unfamiliar groups during the first and second day after regrouping. Unfamiliar pigs had higher injury scores and spent less time eating during the first day after regrouping compared with familiar pigs. Average daily gain and feed intake were decreased in unfamiliar groups during the initial 6 weeks after regrouping, but not for the entire 14-week period in comparison with familiar groups. The results suggest that pigs previously housed in large groups can differentiate and maintain social relations with pen mates when they are regrouped into small groups, regardless of weight variation. Regrouping non-pen mates caused overt aggression, which was associated with injuries and initial reduction in performance, indicating that pigs derived from large groups can be as aggressive as conventional pigs at mixing into small groups.

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Table 1. Total duration of fighting at regrouping of pigs previously housed in large groups (seconds/pig/4 hours)

	Familiar	Unfamiliar
At regrouping	0.5	48.5
Day 1	0.4	10.8
Day 2	0.5	1.2

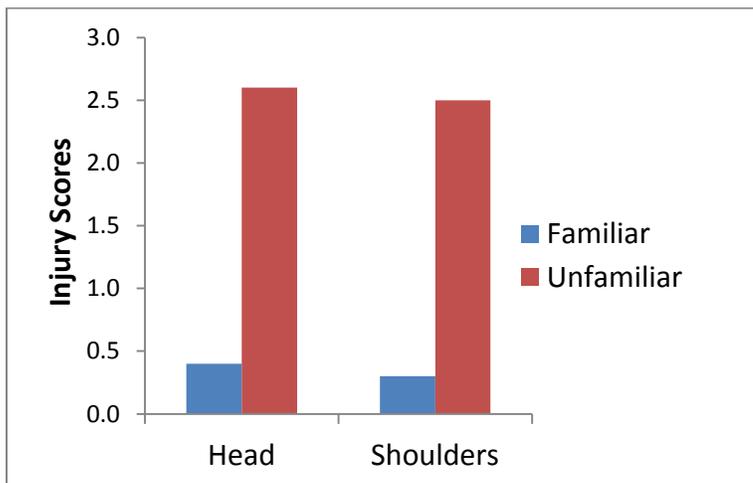


Fig. 1. Injury scores of pigs caused by aggression at mixing.
Scoring method: 0 = no scratches; 1 = 1 to 3 scratches; 2 = 4 to 6 scratches; 3 = more than 6 scratches.

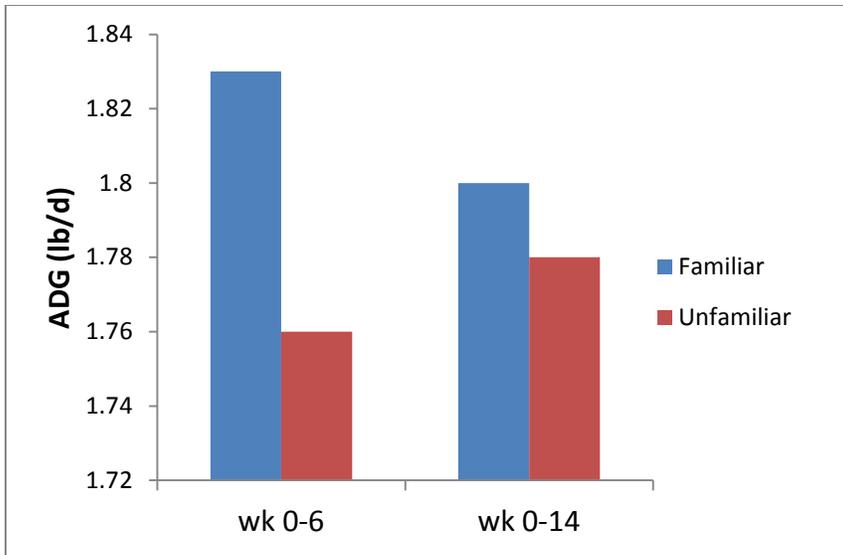


Fig. 2. Average daily gain (ADG) of pigs previously housed in large groups.