

Title: Using conveyor belt to load and unload pigs to promote self-movement of piglets; -
NPB#15-077

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Date Submitted: March 31st, 2017

Scientific Abstract:

Transportation is known to be a multi-faceted stressor, with the process of loading being one of the most significant factors impacting the stress to which animals are exposed. However, transportation is unavoidable given that weaned pigs and nursery pigs need to be moved to growing facilities and finished pigs need to be moved to market. Therefore, this project was designed to determine if using a conveyor to load pigs into the top deck of a simulated straight deck trailer could lower the stress to which pigs and handlers are exposed. Pigs were assigned to either a Control group which were herded up a stationary conveyor ramp into a top deck trailer (8' 2" above the ground); or Conveyor group which were herded onto a mobile conveyor ramp into a top deck trailer. The conveyor was 25' long, 3' wide and rose to 8' 2" height at a 16 degree slope, and moved 37 feet per minute. It conveyed pigs up to an aluminum, small livestock transporter, 90" L x 44" W x 43" H. Two age groups were tested, Weaned pigs which were moved in groups of 20 (n = 14 groups/treatment); and Nursery pigs which were moved in groups of 10 (n = 15 groups per treatment). Behavior was recorded during loading, including slips and falls, vocalizations, assists, and time to load. Heart rate of 2 sentinel pigs/group and the handler were recorded during loading, and body temperature of the handler after loading. Pigs were held in the simulated trailer for 30 minutes while heart rate was recorded. After which, they were unloaded and held in a holding pen for an additional 30 minutes while heart rate was again recorded. There were no treatment differences for slips or falls ($P < 0.90$). Vocalizations were too few to statistically analyze. Both Weaned (2.8 ± 0.7) and Nursery (1.6 ± 0.5) Conveyor pigs needed to be assisted onto the conveyor more than Weaned (1.6 ± 0.5) and Nursery (0.3 ± 0.1) Control pigs ($P < 0.06$). Although time to load differed in different stages of loading ($P < 0.10$), there was no difference in total loading time between the treatments for any age group ($P < 0.15$), with Weaned and Nursery pigs loading in 50 to 45 seconds respectively. There were no treatment differences for heart rate variability measures ($P > 0.10$). However, loading increased heart rate of Nursery pigs ($P < 0.005$), but not Weaned pigs. Nursery pigs had greater ratio of Low Frequency to High Frequency power (LF/HF) during loading ($P < 0.02$) compared to other phases of the procedure in both Control and Conveyor groups. Heart rate and body temperature of the handler was not effected by treatment ($P < 0.26$). However, the body temperature of the handler when moving Weaned pigs was greater than when moving Nursery Pigs ($P < 0.0006$). Based on behavior and physiology the pigs had similar experiences in both treatments, thus conveying the pigs up into the trailer did not decrease their stress, nor did it

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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increase it. Pigs being moved onto the moving conveyor did balk for a few more seconds than when the conveyor was not moving (Control pigs); but total time to load was the same. This study shows that it is feasible to use a conveyor to load pigs and is not detrimental, but it may not be advantageous either.