

# Effects of Neck Rail Position on Dairy Cattle Behavior

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Dairy producers are faced with a variety of recommendations for free-stall design, but the effects of these design options on cow behavior have received little systematic research. In a series of experiments we have assessed the effects of neck rail position on cow behavior and stall cleanliness. In one experiment, we compared 4 levels of neck rail height (none, 100, 113, and 125 cm) in a preference test. Eleven Holstein cows were individually housed with access to 4 free-stalls. Cows showed no preference based on neck rail height and when the cows were restricted to each of the 4 stalls, there was little effect of height on how long cows spent lying in stalls. However, cows spent 1.0 h / day longer standing in stalls with no neck rail compared to stalls with a 100 or 113 cm rail. In a second experiment, we examined neck rail placement in relation to distance from the curb, when height was held constant at 125 cm. This feature also affected standing time in the stall, with animals averaging 15 min/day more standing when the neck rail was farther from the curb (168 cm compared with 150 cm from the curb). In a final experiment, we measured the effect of the presence or absence of a 123 cm neck rail on stall cleanliness for 14 animals. Stall soiling while standing increased two fold without a neck rail. The advantages of low standing times, such as stall cleanliness, should be balanced against adverse effects on hoof health.

Implications for industry: Both neck rail height and distance from curb affect amount of time cows spend standing in the stall. Stall soiling increases with standing time, but the stall provides a non-concrete standing surface known to benefit hoof health. New research is focusing on providing more comfortable surfaces for cows to stand elsewhere in the barn, such as in front of the feed alley.