Title: Exercise conditioning reduces the risk of neurologic decompression illness in swine

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Abstract: During development of a pig model of neurologic decompression illness (DCI) we noted that treadmill-trained pigs seemed less likely to develop DCI than sedentary pigs. The phenomenon was formally investigated. Twenty-four immature, male, castrated, pure-bred Yorkshire swine were conditioned by treadmill running, while 34 control pigs remained sedentary. All pigs (weight 18.75-21.90 kg) were dived on air to 200 feet of seawater (fsw) in a dry chamber. Bottom time was 24 min. Decompression rate was 60 fsw/min. Pigs that developed neurologic DCI were treated by recompression. Pigs without neurologic signs were considered neurologically normal if they ran on the treadmill without gait disturbance at 1 and 24 h postdive. Of the 24 exercise-conditioned pigs, only 10 (41.7%) developed neurologic DCI, compared to 25 of 34 (73.5%) sedentary pigs (X2 = 5.97; P = < 0.015). Neither mean carcass density (adiposity) nor mean age were significantly different between groups. No patent foramen ovale was detected at necropsy. An additional control group of 24 pigs was dived to clarify the influence of weight. The results suggest that the risk of neurologic DCI is reduced

by physical conditioning, and the effect is independent of differences in age, adiposity, and weight.

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