Headroom requirements for horses in transit

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Abstract — Horses intended for slaughter in Western Canada are frequently transported in double-deck trailers, where headroom may be restricted. Poll and withers height was estimated from type photographs of various horse breeds. The headroom required by Canadian legislation and codes of practice may not be sufficiently restrictive to protect the welfare of sport type horses when transported.

Résumé — Exigences relatives à la hauteur libre dans les remorques pour les chevaux. Dans l'ouest du Canada, les chevaux menés à l'abattoir sont souvent transportés dans des remorques à deux étages, où la hauteur libre est restreinte. La hauteur totale et au garrot a été estimée à partir de photographies de diverses races équines. La hauteur libre prévue par la loi canadienne et les codes de pratique peut ne pas être suffisante pour garantir le bien-être des chevaux de course pendant leur transport.

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Introduction

The humane care of companion and farm animals is of increasing concern to the public. The transportation of horses to slaughter is a specific public concern (1). Recently, the United States Animal and Plant Health Inspection Services proposed regulations pertaining to the commercial transportation of horses to slaughtering facilities (2). The purpose of the proposed regulations is to establish minimum standards to ensure the humane movement of horses to slaughtering facilities via commercial transportation. The proposed regulations cover, among other things, the food, water, and rest provided to these animals. In addition, the proposed regulations would prohibit transportation of horses deemed to be unfit for travel, the use of electric prods on horses, and, after 5 years, the use of double-deck trailers for commercial transportation of horses to slaughtering facilities. The intent of phasing out the use of double-decked trailers for horses is, in part, to allow each horse on a conveyance to stand with its head extended to the fullest normal postural height. In one study, horses transported for slaughter in double-deck trailers had a 3.5 times greater risk of sustaining injuries than did horses traveling in single-deck trailers (3). The majority of injuries were to the face and head.

A concern for adequate headroom for animals while being transported is also articulated in the Canadian *Health of Animals Regulations*. The regulations read in Section 142, "No person shall transport or cause to be transported animals in a railway car, motor vehicle, aircraft or vessel unless (a) each animal is able to stand in its natural position without coming into contact with a deck or roof."

The Canadian code of practice for horses goes further in defining appropriate headroom for horses by describing "natural position" to mean, have a full unobstructed range of head and neck motion (4). The code suggests that one inch of height above the withers for every hand (4 inches) in withers height could be used as a guideline. This preliminary investigation was initiated to test, from a broad range of equine conformation, if application of the 125% of withers height guideline is likely to provide sufficient headroom.

Methodology

A single reference book was consulted to select images of horses standing in a natural position, as viewed from a lateral projection (5). Images were selected for analysis where front feet, the withers, and the poll of the head were clearly visible. Forty-six images met the criteria for analysis. The images were all photographs of horses, except one, which was the Orren Mixer painting, "The American Quarterhorse." This image was included as it is easily recognized and is the breed ideal for American quarterhorse breeders worldwide, also the stance of the horse closely fit the criterion for selection.

The photographs were enlarged by 200% and were photocopied onto 1-mm grid graph paper. In an attempt to correct for parallax error, where the near front leg appears longer than the far leg, a center dead point was chosen by visual approximation midway between the soles of the front feet. Vertical distances were

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measured by counting grid lines from the grid line crossing the center dead point to the point of the withers and the poll. Data was entered into a spreadsheet (Excel, Microsoft Corporation, Seattle, Washington, USA), where the poll height:withers height ratio was calculated. Data analysis was done by using a commercial statistical program (Analyse-It, Analyse-It Software, Leeds, England).

The horses were classified into 1 of 3 groups, as indicated in the breed standard reference. The horses were classified as sport, if the description in the breed reference indicated the aptitude was primarily saddle, racing, or sport; mixed, if the aptitude described was riding or light draft; and draft, if the breed standard described the breed as draft. Images of 16 sport, 19 mixed, and 11 draft horses were analyzed.

Results

When analyzed, the images of 7 of 16 sport horses and of 3 of 19 mixed horses exceeded the ratio of poll height:withers height of 1.25:1. All images of draft horses fell below the 1.25 ratio of poll height to withers height (Figure 1). The horse image with the largest ratio was that of an Arab stallion at 1.35:1. The mean and 95% confidence intervals of poll height:withers height ratio for sport, mixed, and draft horses were 1.24 (1.21–1.27), 1.22 (1.20–1.24), and 1.17 (1.14–1.20), respectively. Regression analysis of withers height on poll height:withers height ratio was not significant ($P = 0.2$), showing that horse height had no effect on the headroom ratio. A Kruskal-Wallis one-way analysis of variance indicated a significant effect of class of horse on the poll height to withers height ratio ($P = 0.004$). A Wilcoxon rank-sum test indicated no difference in the poll height:withers height ratio between the sport and mixed class of horse ($P = 0.25$) and a significant difference between both mixed and draft ($P = 0.007$) and sport and draft ($P = 0.003$). In the images analyzed in this study, draft horses held their heads significantly lower when standing for being photographed than did nondraft horses. No horse stood in a position with the poll lower than the withers.

Discussion

Evaluating images of horses as a surrogate for physical measurement of horses' withers and poll heights may suffer some limitations in application. The study should be repeated with actual physical measurement of horses, if regulators intend to make engineering-based requirements for horses being transported.

The images analyzed in this study were primarily photographs of show horses on line. Horses, especially sporting breeds, shown on line are trained to hold the head at or near the upper limit of the range of motion. Most horses standing in a natural relaxed position would hold their head at somewhat less than the upper limit of range of motion.

In Manitoba, national codes of practice have the full force of law under the provincial *Animal Care Act.*

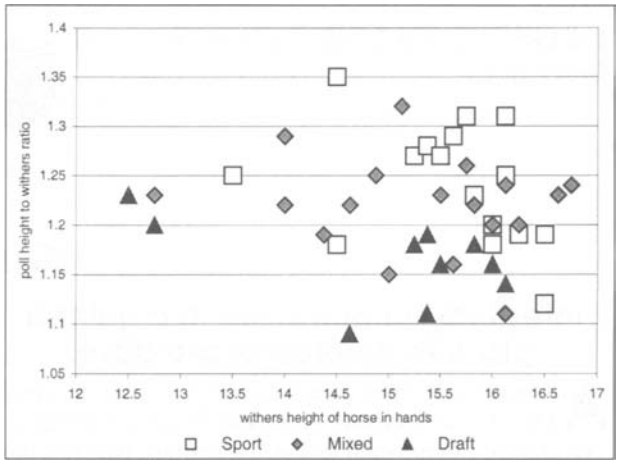

Figure 1. Graph of poll height:withers height ratio against the breed standard height of the horse. Where a range of height for the breed was reported, the average height was used. There is no effect of horse height on the ratio.

The *Act* defines agricultural uses of animals as accepted activities, only so long as the uses are consistent with a standard code of conduct. The requirement for a full range of head and neck motion for horses in transit intended in the horse code may be enforceable in Manitoba under the *Animal Care Act.* Prosecution in Manitoba under a provincial act may not succeed where there is a national regulation that is more specific to the situation but less stringent.

The guideline, in the code of practice for horses, of one inch headroom per hand of horse height at the withers, (2.5 cm for every 10 cm in height at the withers), although easy to remember, may not provide for sufficient headroom to allow a full range of motion of the head and neck in nondraft horses. The belly and top compartments of possum belly trailers are less than 70 inches (178 cm) tall, and applying the liberal 125% rule, no horse exceeding 14 hands (142 cm) at the withers should be loaded into those compartments of standard multi-deck livestock trailers. When the federal regulations on humane transport are reviewed, the intent of the headroom clause should be clarified, and harmonization with regulations in the United States may be necessary. CVJ

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