

Effects of Weight Distribution on Movement of Mature Riding Horses

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Horses often carry riders with different skill levels who may distribute their weight differently. The objective of this study was to determine the effects of weight distribution on the movement of mature riding horses at the walk and trot. Fifteen mature riding horses of various breeds were fitted with a surcingle and increasing amounts of weight (13.6 kg, evenly distributed; 27.2 kg, evenly distributed; and 27.2 kg, unevenly distributed). Each horse was videotaped in hand at the walk and trot tracking both directions on a flat surface every 15 days for a period of 15 weeks. The camera was positioned at a height of 3.0 m and 8.6 m away from and perpendicular to the line of travel. Videos were analyzed using OnTrack Equine software for stride length, maximum knee angle and maximum hock angle at the walk and trot. Average stride length at the walk and trot for horses fitted with the surcingle only was 2.19 m and 2.21 m, respectively. There were no differences in average stride length at the walk for horses carrying 13.6 kg or 27.2 kg evenly distributed across their back compared to horses carrying no additional weight. However, a shorter stride length at the walk was observed for horses carrying 27.2 kg unevenly distributed across their back ($P < 0.05$). At the trot, average stride length and hock angle decreased in response to increasing amounts of additional weight and uneven distribution of that weight ($P < 0.05$). Average knee angle at the trot decreased in response to uneven weight distribution but not due to increasing amounts of weight. Overall, the results of this study indicate that additional weight placed on a horse's back and the distribution of that weight can influence the movement of the horse at both the walk and trot.