

The Effects of Five Commercially Available Harnesses on Canine Gait

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Background: Recently multiple different styles of harnesses have become available for dogs. To the authors' knowledge there is no study that objectively evaluated the effect of the most common commercially available harnesses on gait characteristics. The purpose of this study was to objectively evaluate how five commercially available harnesses affect canine gait characteristics at the trot using temporospatial gait analysis.

Hypothesis: Harnesses that cross the body at or below the scapula will significantly reduce forelimb stride length at the trot, while harnesses that cross the body above the shoulder joint will not significantly alter forelimb stride length at the trot.

Methods: Ten healthy, orthopedically sound Border Collies weighing between 11.3- 20.0 kg were recruited for this study. A lameness evaluation and examination were performed prior to data collection to ensure that no orthopedic or neurological deficits were present. Dogs were omitted from the study if there was a history of a previous orthopedic or neurological condition, if abnormality was detected on orthopedic evaluation, or if lameness was noted upon gait evaluation. The following five harnesses were used for this study: Balance Harness^{TM, a}, ComfortFlex® Sport Harness^b, Easy Walk Harness^c, Julius K9 IDC Harness^d, and the Original Fleece-Lined Dog Harness^e. The harnesses were defined as either a restrictive harness that crossed the body at or below the scapula or a non-restrictive harness that crossed the body above or cranial to the scapula. For each patient, three passes trotting across a pressure sensing walkway (Gait4Dog®) were recorded without wearing a harness, while wearing each harness but with a leash attached loosely to a collar, and while wearing each harness with a leash attached loosely to the harness. The harnesses were fitted to each dog and deemed to fit appropriately when 2 fingers could be placed under the harness at any place where it was adjustable. The following variables were measured or calculated for each passage: total pressure index percentage (TPI%), stance time percentage (ST), stride length (SrL), and step length (StL). These values recorded while the dog was wearing each harness were then compared to the values recorded while the dog was not wearing a harness and statistically analyzed.

Results: The average age was 5.8 years old (1-8 years old). Three of the five harnesses were classified as restrictive harnesses: the ComfortFlex Sport Harness, the Easy Walk Harness, and the Julius K9 IDC Harness. Two of the five harnesses were classified as non-restrictive harnesses: the Original Fleece-Lined Dog Harness and the Balance Harness. This presentation will discuss how total pressure index percentage (TPI%), stance time percentage (ST), stride length (SrL), and step length (StL) were affected.

Discussion: It has been postulated that some harnesses that cross the body at or under the scapula restrict shoulder extension and forelimb excursion. Some believe that this alteration in gait could potentially predispose dogs to injury, particularly shoulder tendinopathies.¹ One recent study evaluated the pressure distribution under three different types of harnesses used for guide dogs

and found significant differences in pressure distribution among the harnesses.² This study will objectively evaluate how five of the most common commercially available harnesses affect canine gait characteristics at the trot. While further studies would be needed to define the relationship between restrictive harnesses and injury, harness function and the effects on canine gait should be taken into consideration when choosing a harness. This should be contemplated in not only working and sporting dogs but also in active companion dogs.

Clinical Relevance: Harnesses that limit shoulder extension and restrict forelimb excursion could predispose dogs to shoulder tendinopathies. This should be considered especially in not only working and sporting dogs but also in active companion dogs.

Footnotes:

- a. Balance Harness™, Blue-9 Pet Products, Maquoketa, IA, USA
- b. ComfortFlex® Sport Harness, ComfortFlex, PetPDC, Potter Corners, NY, USA
- c. Easy Walk Harness®, PetSafe, Knoxville, TN, USA
- d. Julius K9 IDC Harness®, Julius K9, Innova Dog Comfort, Hungary
- e. Original Fleece-Lined Dog Harness®, Dog Games, England

References:

1. McCauley L, Van Dyke JB: Therapeutic Exercise, in Zink MC, Van Dyke JB (eds): Canine Sports Medicine and Rehabilitation (ed1). Ames, IA, Wiley-Blackwell, 2013, pp 139-140.
2. Peham C, Limbeck S, Galla K, Bockstahler B. Pressure distribution under three different types of harnesses used for guide dogs. *The Veterinary Journal*. 2013; 198:e93-e98.