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To Harness or Not To Harness? That is the Question

… that was addressed by a recent study that is the topic of this month's newsletter. You've probably noticed an **upsurge** during the last several years in the use of **harnesses as an alternative to collars**. At the same time, there has been a **concern that harnesses might affect dogs' gait**. Researchers in the UK investigated exactly that question by comparing the effect of restrictive and non-restrictive harnesses on shoulder extension in dogs when walking and trotting (1).

There are two main **categories of harnesses**: those that are considered **non-restrictive** to front limb movement, which have a Y-shaped chest strap (Fig. 1), and those considered **restrictive**, which have a strap that lies across the chest horizontally (Fig. 2).

Figure 1. Example of a non-restrictive harness. These have a Y-shaped component that should lie over the manubrium (front of the sternum).

Figure 2. Example of a restrictive harness. These generally have a horizontal strap that runs over the shoulder joint or the scapula (shoulder blade) and across the chest/neck of the dog.

In this study, 9 dogs were moved at a walk and a trot on a treadmill wearing either no harness, a non-restrictive harness (an X-back mushing harness; Trixie Fusion harness), or a restrictive harness (Easy Walk harness). The researchers placed markers on the sides of the dogs' legs and used video cameras to **measure the angle of the shoulder when the front limb was in maximal extension** (when the leg was placed furthest forward).

Some of their **results were unexpected!**

Results of the Study: No harness vs. non-restrictive harness vs. restrictive harness

- Dogs wearing **only a collar had significantly more shoulder extension**, both while walking and trotting, than dogs wearing either type of harness.
- Dogs wearing **non-restrictive harnesses had significantly less shoulder extension than dogs wearing restrictive harnesses** when both walking and trotting. That was the **unexpected finding**, and we'll look at those results more closely in a minute.

The researchers also examined the effect of **weights added to the harness to try to simulate the dog pulling against the harness**. The weights were used in a way that caused the harness to be pulled up and away from the dog's back at an approximately 45o angle, similar to how the harness would be pulled on if a person were walking behind the dog.

Results of the Study: Weights vs. No Weights

- Dogs walking using **non-restrictive harnesses with weights had significantly less shoulder extension** than dogs wearing non-restrictive harnesses without weights or than those wearing restrictive harnesses with or without weights.
- Dogs trotting using **non-restrictive harnesses with weights had significantly less shoulder extension** than dogs wearing restrictive harnesses with or without weights.

The authors are to be commended for performing this important study and for their excellent discussion of the results.

One limitation of the study mentioned by the authors was that their system was not designed to measure step or stride length or stance time, which can affect shoulder extension. However, a previous harness study did look at those parameters (2). That study showed that **both non-restrictive and restrictive harnesses alter step and stride length as compared to the same dogs wearing just a collar**.

Questions, Questions…

1. **Why would the so-called non-restrictive harness reduce shoulder extension more than the restrictive harness?**

A: In my opinion, it might be a function of **harness fit**. As you can see in Figure 3 (taken from the publication but with arrows added), the non-restrictive harness is not ideally fitted to the dog. The straps that lie in front of the scapula (shoulder blade) are **pressing into the dog's body** (arrows), almost certainly preventing the dog from moving its scapula forward. This, of course, would limit shoulder extension.

A **non-restrictive harness needs to be fitted so that it is tight around the dog's neck**. That way, when the dog is pulling, the Y-shaped chest strap applies pressure to the manubrium (the front of the sternum), and the straps on the side of the neck should not slide back to lie against the shoulder blade. For most dogs, this means that the **neck part of the harness needs to be adjustable and needs to have a clip**, so that it doesn't have to be large enough to slip over the dog's head.

2. **Why would the addition of weights to the non-restrictive harness further reduce the dog's shoulder extension?**

A: See answer to question 1. I think that when the weights pulled on the harness, those **loose side straps** pulled even harder against the dog's shoulder blades, further restricting shoulder extension.

3. **Why would the addition of weights to the restrictive harness allow the dog to have more shoulder extension?**

A: It is likely that the weights pulling upwards and backwards on the restrictive harness **allowed the horizontal band to rise up** on the dog's front, taking some of the pressure of that band off of the shoulder joint (Fig. 4). This would allow the dog to extend its shoulder further (although it might put more pressure on the dog's neck).

Figure 3. This shows the experimental set-up for dogs using non-restrictive harnesses in the Lafuente study. The white lines show how the angle of maximum shoulder extension was measured. The yellow arrows show the harness pressing into the dog's body in front of the scapula, which likely would prevent the shoulder blade from freely sliding forward when the dog is wearing this harness, This would reduce the angle of shoulder extension.

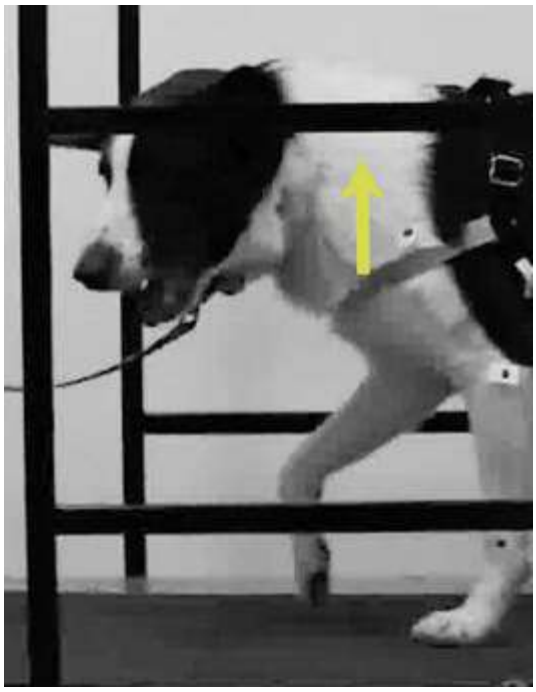

Figure 4. This shows the experimental set-up for dogs using restrictive harnesses in the Lafuente study. The yellow arrow indicates the direction in which the harness might move when a weight that pulls upward and backward at a 45o angle is attached to the harness. This would reduce pressure on the shoulder joint, but might put increased pressure on the dog's neck.

Bottom Line:

- Harnesses are still a **safer option** for dogs that have **tracheal collapse**, **laryngeal paralysis**, **obstructive airway disease** or **neurological problems involving the neck**, such as wobblers disease.
- Because two studies now provide good evidence that **both restrictive and non-restrictive harnesses alter dogs' gaits**, a collar might be a better choice for many dogs. However, dogs wearing collars should be trained to walk politely, without pulling, on a leash. An excellent booklet that shows how to do this is *My Dog Pulls. What Do I Do?* By Turid Rugaas (3).
- If you choose to use a **non-restrictive harness**, make sure it is **tightly fitted** around the dog's neck so that it doesn't slide back and put pressure on the dog's shoulders.
- If you choose to use a **restrictive harness**, make sure it is **loosely fitted**, so that it can slide away from the dog's shoulder as needed.

References

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