# To Harness Or Not To Harness? That Is The Question…

by Chris Zink | Jan 31, 2019 | Equipment | 31 comments

… 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).

## TYPES OF HARNESSES FOR DOGS

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).

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!**

## DOG HARNESS STUDY RESULTS

**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 $45^{o}$ 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, even though these can definitely 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 all comes down to **harness fit**. As you can see in the figure below (taken from the publication 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 harness applies pressure to the manubrium (the front of the sternum), and the straps on the side of the neck do 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 by pulling upwards and backwards on the restrictive harness, it **allowed the horizontal band to rise up** a bit on the dog's front, taking some of the pressure of that band off of the shoulder joint, thus allowing the dog to extend its shoulder further.

## 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 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.

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

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**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.

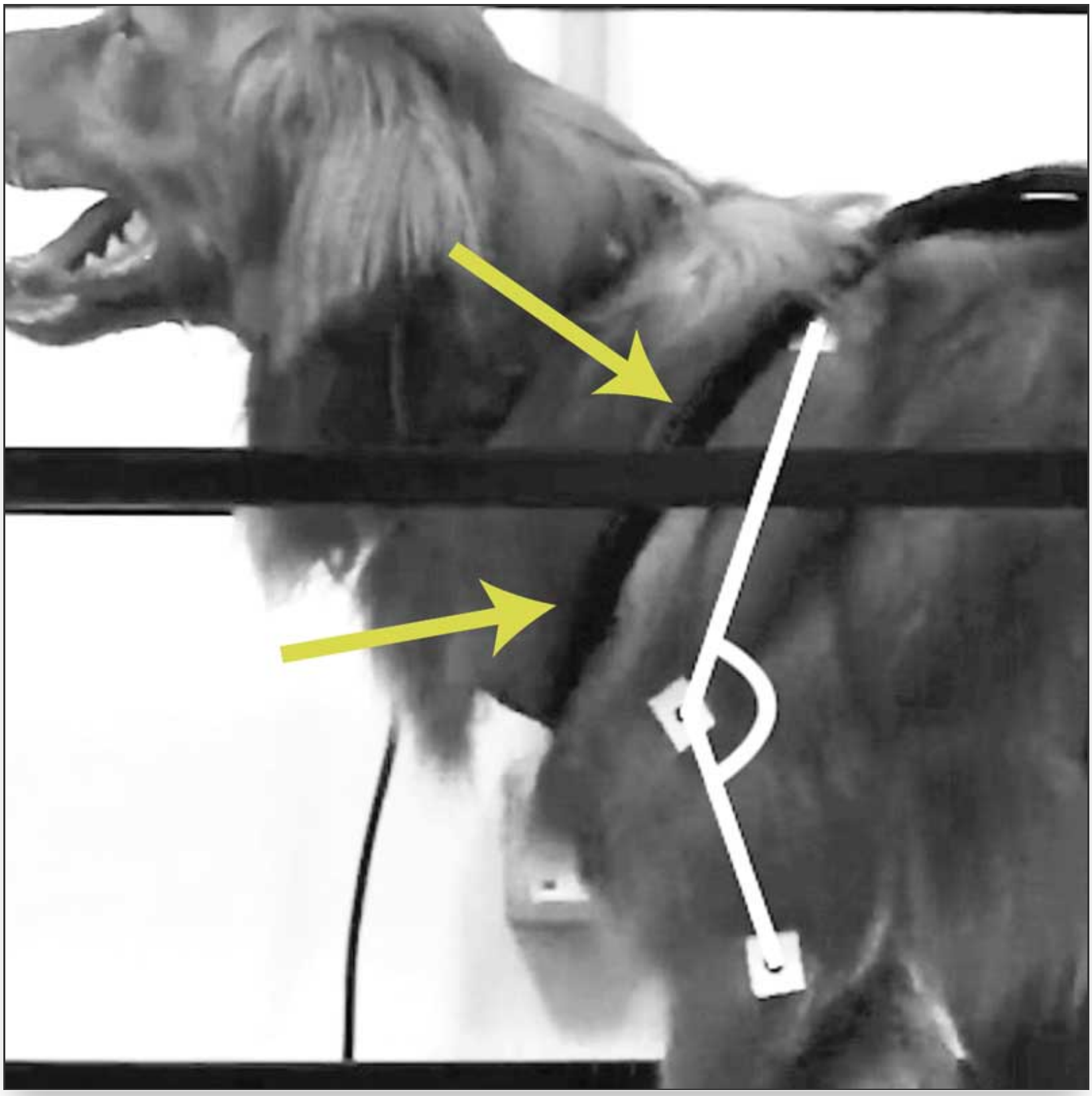

**Figure 3:** This figure shows the set-up for a dog using a non-restrictive harness. The white lines show how the angle of maximum shoulder extension was measured. The yellow arrows show the harness pressing into the dog's body in front of the scapula, which likely would prevent the shoulder blade from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

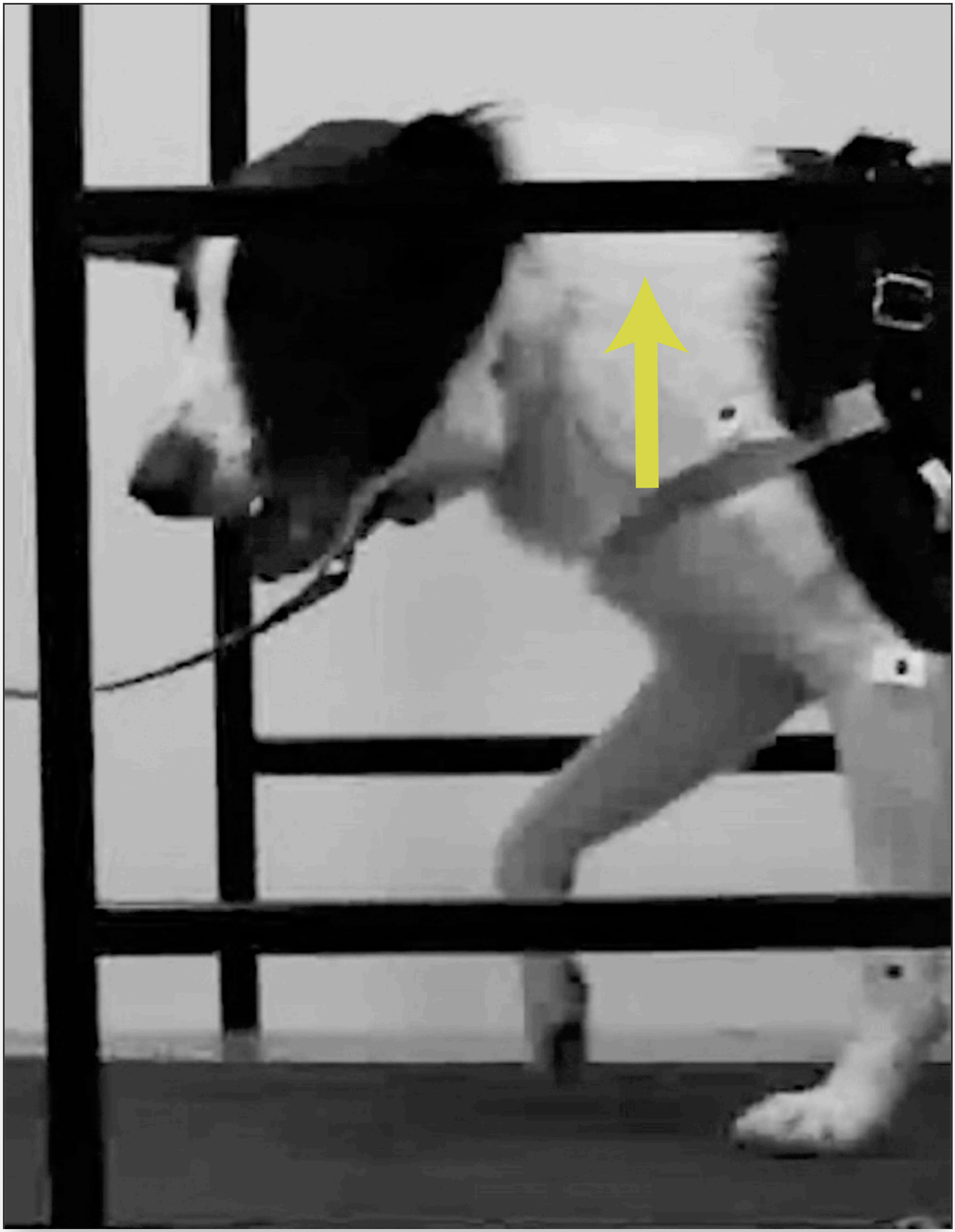

**Figure 4.** This shows the experimental set-up for dogs using restrictive harnesses in the Lafuente study. The yellow arrow indicates the direction in which the harness might move when a weight that pulls upward and backward at a 45$^{o}$ angle is attached to the harness. This would reduce pressure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

## REFERENCES

1. Lafuente MP, Provis L, Schmalz EA. Effects of restrictive and non-restrictive harnesses on shoulder extension in dogs at walk and trot. Vet Record 2018;1-7. doi: 10.1136/vr.104946
2. Carr BJ, Dresse K, Zink MC. The effects of five commercially available harnesses on
canine gait. Proceedings of ACVS Surgical Summit, 2016.
3. Rugaas T. My Dog Pulls. What Do I Do? 2005. Dogwise Publishing.

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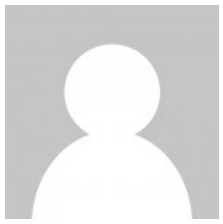

**Jeanne Manser** on February 5, 2019 at 7:43 am

It would be interesting to see a similar study looking at the effect of pulling in a collar on the spine of the dog-of different sizes. I think a lot of people use harnesses instead of collars because they have dog who pull excessively on collars and they are afraid of spinal or tracheal issues, especially people with small dogs. Just food for thought.

Log in to Reply

**Chris Zink** on February 5, 2019 at 11:04 am

Yes, it would, but it is great to have any kind of a controlled study at this point. The authors are to be commended for addressing this – it's a beginning to our being able to understand more fully what is going on when we use harnesses (and even collars) on dogs!

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**Jennifer Fisk** on February 5, 2019 at 7:47 am

As a boarding kennel owner, I have seen a huge upsurge in the number of dogs coming in with harnesses. Most are pulling their owners all over. If only people would train their dogs to walk without pulling the issue of collar damaging necks would not exist.

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**Chris Zink** on February 5, 2019 at 11:05 am

Turid Rugaas's book is great for training a dog how to walk without pulling. Ultimately a better solution than any harness 🙂

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**funhog** on February 6, 2019 at 5:46 pm

Totally agree with the suggestion of Turid Rugaas book "My Dog Pulls What do I do?". Worked wonders for us. Once we trained one dog, its been so much easier on the others because that first dog helped the newer ones.

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**Chris Zink** on February 8, 2019 at 4:47 pm

Thanks for your comment. It's

great to know that worked for you (and that dogs teach others :-)).
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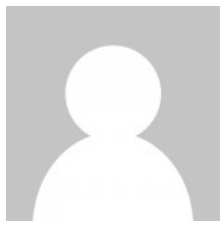

**Sal** on March 23, 2019 at 7:06 pm

This is so true. A lot of owners are lazy not training their dog and using a harness to correct the pulling.
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**Britain Hill** on February 5, 2019 at 8:26 am

I'm wondering if the non restrictive harness was tested with the leash attached to the front ring, as shown.
That would change the findings. Tachi usually wears a harness from Perfect Fit, which has 3 components that you can order in different sizes according to 3 measurements of the dog.
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**Chris Zink** on February 5, 2019 at 11:05 am

The harness was only tested with the weights attached to the back D-ring.
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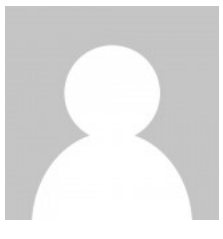

**Monica Buchstatter** on February 5, 2019 at 8:34 am

Can you make any recommendations for a good harness for walking/hiking and securing dog in vehicle?
Log in to Reply

**Chris Zink** on February 5, 2019 at 11:06 am

I think that you have to try them on your dog and see how the fit is. Dogs vary too much to make any general suggestions. As for a vehicle harness, you should only purchase one that has been properly tested. As the data are always changing, you would need to do a recent google search.

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**Beth Brockhoff** on February 5, 2019 at 8:35 am

Hi- Beth from Avidog. I wish we could share these great articles on FB. This might help create more awareness on your business.

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**Chris Zink** on February 5, 2019 at 11:07 am

Feel free to share the link on Facebook. 🙂

Log in to Reply

**Dayna Merrow** on February 5, 2019 at 8:53 am

This is a wonderful article! For years, as a breeder, I have been telling my puppy families NOT to harness their growing pup. A puppy's gait and growth being affected adversely was simply my "opinion" to many. After a puppy reunion with two people having placed their dogs in ill-fitted harnesses, it is now in my contract. However, when they attend a class and the "expert trainer" suggests it, they question me. Still. Thank you for giving me something more to share to back up my reasoning! If people simply TRAIN their dogs, this would not come up as a problem over and

over again.

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**Chris Zink** on February 5, 2019 at 11:07 am

Agree!

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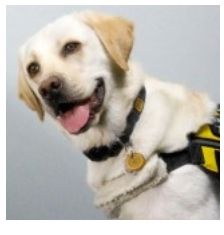

**Mary McNeight** on February 5, 2019 at 11:33 am

Not everyone has the physical ability to train a dog not to pull on a collar. As a person with sciatica and degenerative disc disease I cannot risk a single hard pull from a large dog on a collar. It could put me out of commission for months in screaming, agonizing pain. I work with a lot of disabled people who if pulled during a low blood sugar episode or during a POTS episode could end up with a concussion or a TBI. Before you make blanket recommendations you have to take into consideration the human element of the equation as well.

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**Chris Zink** on February 5, 2019 at 11:54 am

Of course! Every individual makes their own decision based on many factors, including personal ones.

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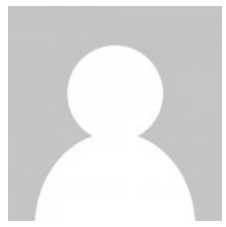

**Joan Capaiu Greene**

on February 5, 2019 at 2:36 pm

As a service dog owner-trainer (now on #3) with physical challenges, I've found there are a number of effective tools available to quickly teach a dog not to pull, in addition to harnesses and collars. Strength isn't my thing any more. Google and DuckDuckGo searches plus YouTube are great sources of information – which, as always, must be applied appropriately for greatest efficacy. 😉

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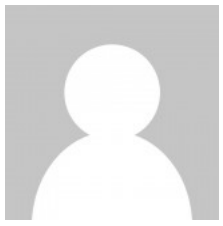

**Lynn** on February 5, 2019 at 7:28 pm

What's to prevent a large dog from giving a single hard pull on a harness as well? As someone who handles dozens of dogs on any given day as a veterinary nurse, the ones on harnesses pull worse than those on collars and I have significantly less control over them in the hospital setting as well. Almost every large dog in a harness earns itself a slip leash for safety and control.

Either way, as Chris mentions, training is the answer, but nobody seems to be able to do it effectively, unfortunately. If I handle ONE dog in a day that doesn't choke itself out trying to pull me every which way to Sunday, I'm amazed.

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**Chris Zink** on February 6, 2019 at 1:19 pm

Exactly. There are LOTS of

dogs out there pulling on harnesses just as much as they would on a collar.

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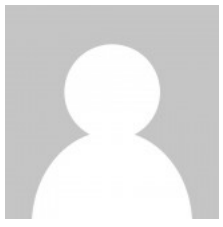

**Bex** on February 9, 2019 at 4:12 pm

I would definitely recommend a prong. Harnesses usually increase pulling.

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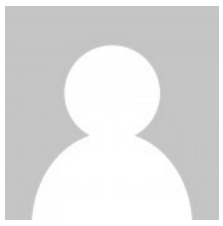

**Lydia** on February 5, 2019 at 4:13 pm

Do you know if any similar studies have been done on head halters for dogs such as the halti?

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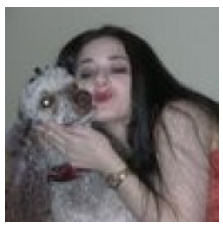

**Me** on February 5, 2019 at 9:42 pm

I think we need more info to come to any definitive conclusions, rather than this being turned into a game of telephone on social media, like I know will happen (happened last time too with your gait analysis).

I'd like to see results of a well fitting, non-restrictive harness, the restrictive harness also being well fit and lifted up and connected to the collar, halters, and collars. Also different makes of harnesses for the two groups, for example, some of the Y harnesses look ideal in front but run across the scapulas.

Would also like to know what are the repercussions of this altered gait, if any. Also what is causing it exactly.

Looking forward to more research and thank you for helping us to understand and be aware of this info.

I'd like to know what the safest option is. No matter what it is.

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**Chris Zink** on February 6, 2019 at 1:18 pm

I agree, more studies have to be performed to understand all the permutations and combinations. The big issue is coming up with funding for such studies when there are so many studies on life and death situations (like cancer, heart diseases, etc.) to be undertaken as well. That's why it is so important that this study was done at all.

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**Susan Waltman** on February 5, 2019 at 11:45 pm

I'd like to see a study such as this also compare the dog's step/stride length when voluntarily moving slower — eg, trained dog on collar and loose leash, matching pace with a slow human. Breed ring gaiting demonstrates how fast medium and large dogs move when "striding out." To trot slowly (at human walking speed), a dog needs to slow the whole cycle, and/or shorten stride…

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**Chris Zink** on February 6, 2019 at 1:16 pm

This was the exact subject of the study done by Brit Carr, Kaitlyn Dreese and me

(reference 2). The results of that study showed that dogs walking with a loose leash had the least step/stride length with a collar as compared to any of the 5 harnesses we studied. The larger the surface area of the harness, the worse the dog's gait was.

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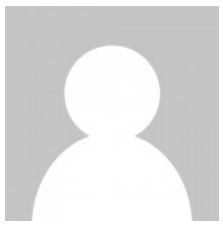

**Sara** on February 8, 2019 at 4:19 pm

Based on this, what would be the recommendation for times when you DO want the dog to be pulling (bikejoring, etc)?

Sounds like the non-restrictive option they used was supposed to be a mushing harness, but if that limited the shoulder movement is that still the best option?

Log in to Reply

**Chris Zink** on February 8, 2019 at 4:46 pm

Because of the wide variety of dog shapes and sizes, I think that you have to try different ones on. However, as I mentioned in my review of the study, I feel that the harness should have a clip at the neck so that it can fit tighter in that area and not slide back, allowing most of the pressure to be applied to the manubrium when the dog is pulling. Hope this helps

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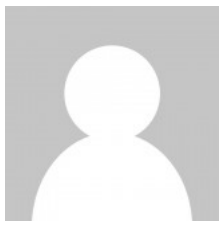

**Sara** on February 10, 2019 at 12:14 am

Very helpful, thank you for your reply! I will have to research more about the

manubrium 😉

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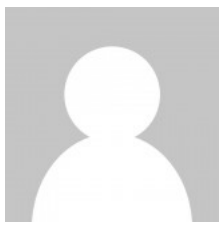

**Sandy** on February 15, 2019 at 11:06 pm

I think it's wonderful this study has been done.
However I am confused. I am trying to see eaxactly what type of non-restrictive harness was used.
The Y harness in the picture doesn't look as though there is a sternum piece (which the description says it has) and the lead attaches at the front.
Also the examples of non-restrictive harnesses given were an X-back mushing harness (where the lead is attached at the back and a lot different to the picture) and the Trixie Fusion harness which is a restrictive harness with the lead attaching at the back.
Could you please clarify?

Log in to Reply

**Chris Zink** on February 16, 2019 at 7:04 am

This is a question for the author to answer as we didn't perform the study – her email is available in the paper.

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