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Letter to the Editor: On the origin of lameness – do opinions differ less than it might appear at first glance?

Dear Editor,

Reading the correspondence in what has been called the *lameness saga* in Equine Veterinary Journal gives the impression that the stance on how lameness should be seen, as a clinical sign or as a disorder in itself, differs widely between the authors of the original editorial [1] and those of the letter to the editor entitled: A response to 'What is lameness and what (or who) is the gold standard to detect it?' [2]. In fact, this difference may be less than it might appear at first glance and I would like to expand on this topic, because it is important. Indeed, its importance is illustrated by the series of editorials and letters itself; in its 50 years, Equine Veterinary Journal has not seen an editorial spark so much discussion in print and at scientific meetings.

The original editorial, which I wrote in conjunction with others from the biomechanics community, was driven by the increased use of quantitative gait analysis and improving accuracy of the tools used for that purpose, enabling better measuring of motion asymmetry [1]. Aware that motion asymmetry is, as we all seem to agree, the most important parameter to diagnose lameness, we warned against over-reliance on asymmetry measurements and any established thresholds derived from these to call a horse lame. The reason for this call for caution was that, at least in the perception of myself and my co-authors, but likely in the perception of most people dealing with horses, professionals and laymen alike, the word 'lameness' has negative connotations. Indeed, a horse considered lame is generally also considered as 'unfit to compete'. Such a qualification should therefore not be used based on surpassing asymmetry thresholds only, without considering other clinically relevant aspects of the horse (or even the rider) in question.

The first reaction on our editorial came from Prof Dyson and Dr Bathe, who recognised the added value of quantitative gait analysis but again warned against overreliance on it. Dyson and Bathe focused principally on the role of the (experienced) clinician as the one who has to make the diagnosis of lameness and should serve as the 'gold standard' in this respect [3]. Adair *et al.* [4], writing in EVJ's correspondence section, opposed this stance and, while acknowledging that the clinician should take more into account than the degree of asymmetry alone, defended the use of quantitative gait analysis as an example of evidence-based veterinary medicine and advocated this as a more objective tool to detect and quantify asymmetry than the eye of the clinician. I could not agree more with the latter assertion.

Next in the saga came a further editorial with the title: 'What is lameness and what (or who) is the gold standard to detect it?' [5]. The second part of that double question seemed, although most polemic, the easiest to solve. There is no doubt that current (IMU-based and other) gait analysis technologies are more sensitive and more accurate in detecting asymmetries than the human eye, but it is also clear that it is the clinician who interprets the data generated by the system and who will finally draw the clinical conclusions. Addressing, the first part of the double question, use of the term 'lameness' should be based on the interpretation of the clinician and not only on the (measured) degree of asymmetry.

In response, Adair *et al.* [2] strongly opposed our statements proposing that 'asymmetry of bilateral movement is the best and most sensitive marker of lameness' without giving other criteria for the use of the term. Nevertheless, it seems we agree that lameness is a clinical sign and not a pathology in its own right. The analogy with fever as suggested by Adair *et al.* [2] in their second letter, which is a similar clinical sign, is a good one and we would like to elaborate a little on this analogy.

In the case of fever, rectal temperature is the biological variable that can be measured very accurately using objective tools; fever is a rise in temperature that is deemed of clinical relevance. Fever is not a diagnosis, but it is a clinical sign that may be a reason for further diagnostic investigations. The same thought process can be applied to lameness: asymmetry is the biological variable; the term lameness is used when there is an asymmetry that is deemed clinically relevant. In both examples there is certainly a negative connotation, as there is no healthy fever and no healthy lameness. Furthermore, the causes of fever or lameness may vary from very serious to completely innocuous and everything in between.

What I, and my previous co-authors, warn against is to use the term 'lameness' indiscriminately for every animal with an asymmetry higher than a certain threshold. When measuring a rectal temperature of 39°C (102°F) of a resting horse, we may conclude it has a fever and will not allow it to compete. When measuring the same temperature after the third loop of a 100-mile endurance race we may be very happy to ascribe this to normal physiological responses and would certainly not stop it from competing further. We will also not call it 'fever' then. Just as rectal temperature is interpreted in the context of the whole animal, objective measurements of asymmetry must form a part of clinical interpretation of the entire animal.

Adair *et al.* [2] talk about a 'false positive' when a lameness (or rather asymmetry) is detected with no pathology present. So, the horse is lame, but in fact not because it is not a real but a false lameness? We do not believe we can educate the equestrian public or the public at large in such a way that they will understand that there is 'good' and 'bad' lameness, neither do we think we should. We might be able to educate them that asymmetry might be clinically relevant in some horses but not others.

I admit that my argument is largely semantic, but in some cases semantics matter. I believe it is less confusing for a client to advise that a horse is capable of continuing in its current level of exercise when stating that 'it has an asymmetry that is (much) higher than in most of the rest of the population' than stating that 'it is lame' or 'that it is lame, but it is a false positive lameness'.

In summary, I believe lameness is a clinical sign and I also agree that modern quantitative gait analysis techniques are, based on current technology and scientific know-how, the best and most reliable way to quantify asymmetries that are the hallmark of this clinical sign. However, I strongly believe it is the clinician who ought to decide whether she or he would use the word 'lameness' for the given horse and the given situation.

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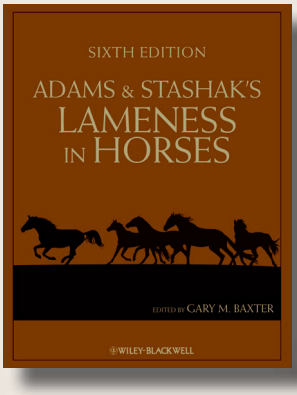

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