

HOOF BALANCE

A working farrier's interpretation

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I believe if farriery is to make new and real advances, there needs to be a general change in our philosophic approach towards our industry.

When I began my working life as an apprentice over thirty years ago, farriery was something of an ancient art, only those who were third generation farriers knew or understood anything about farriery and hoof balance. In fact, at that time it was considered, if any lameness problems occurred then it was the farrier who was the first person that the owner would consult.

With the steady increase in the role of the horse as a leisure pursuit, the equine industry grew and the demand for horse-shoers outstripped availability. Recruitment, training and legislation were introduced out of necessity to protect the horse and save our craft; farriery was being reborn and through this rebirth came reflection. In the past, farriers were taught by tradition and tradition, by its nature, is slow to change. Education was the key, so like good parents; the farriery bodies of the day provided a classroom environment for the new entrants to the trade, albeit for just a few weeks a year and after passing a trade test we were let loose upon the world. I was one among that new age of farriers, keen and eager to find and establish a new identity that would embrace the old with the new.

However all was not well, in the 1980's there was a new phase in progress. There was a growing concern that many lameness problems occurring were now considered to be caused by those self-same farriers who were once held with such high regard.

Since that period, the thirst for knowledge has remained unquenched and the recognition of what good farriery is and who good farriers are has become somewhat controversial. I, for my part, have helped stimulate both question and thought with my contributions to the British Farrier's trade magazine, *Forge*. This abstract and my presentation will be both a sample and a culmination of those works.

The reason, which prompted my inquiry into hoof balance, was that the theoretical ideals upon which farriery are being judged, is based upon misguided and unqualified judgements. My aim was to bring about a more open common sense approach to the subject.

1. 'A perpendicular line dropped from the centre of rotation of the pedal joint should bisect equally the weight-bearing portion of the foot'.

When I looked, I found that rule impossible to achieve by hoof trimming alone, however, assuming that past authors had some justification for arriving at their conclusions, I reviewed their interpretations of ideal shoe length. The result was what I dubbed 'The one and an eighth theory' (Fig 1).

2. 'When assessing medial-lateral hoof balance with the use of the T-square, if the foot is not level with the bar then what you are seeing is a hoof which is imbalanced'.

When assessing hoof balance we need to have guides, however when those guides become rules there is a danger that in turn these rules will become procrustean in their nature. The T-square as a theory is an over simplification and misinterpretation of the evidence. The limb is complex and complex machines are structured by simple components. However, to think of the interphalangeal joints as being like door hinges does not do the mechanism justice. I suggest the joints act as cams, with the distal surfaces that form these joints acting as a profile to transmit motion, with the proximal ends forming reciprocating followers. In effect what this means is that the relationship between the axis of each bone is under constant change whilst any movement occurs. So should we judge medial-lateral balance by the long axis of the cannon bone? Should the pedal bone sit parallel with the ground surface medial-laterally when viewed by means of x-ray? I think the answer should be as obvious as a hand in front of your face because the joints in the equine limb are of the same type as those that can be found in the human hand (Fig 2).

3. 'All horses which display odd sized hooves are suffering from some misdiagnosed, unresolved flexural deformity'.

Handedness stirs controversy and debate but although it is increasingly proven to exist, when we read through the index in the back of our veterinary manuals its not listed. When handedness is discussed, the question is raised is it genetic or is it acquired. In one sense the question is quite irrelevant; the important issue is that it exists. An example of inherent asymmetry can be seen in a high proportion of horses as they stand doing what they enjoy best, grazing. This is an act free from manipulation and is a good indicator of which is their dominant side. As they graze, they do so with one limb stretched out in front whilst the other is tucked beneath them. Whilst some horses alternate their position, others display a very definite singular preferred grazing pattern, a pattern which is a reflection of their preferred leading leg, non-leading leg configuration. So what are the effects of sidedness? Well, quite simply, it is asymmetry; horses with odd feet can be normal (Fig 3a & 3b).

So how do I see the role of the working farrier? Well my philosophical approach to this matter is taken from the wisdom of King Canute the Viking King of England 1016, who, to illustrate to his subjects that he was not the all-powerful ruler of both heaven and earth, instructed his court be moved to the beach. There he sat with his courtiers around him, "Go back sea" he commanded but the sea did not stop. So there he stayed at the risk of being drowned, until all his courtiers agreed that no king has the power to command the forces of nature.

When we talk about corrective farriery we should not be thinking in terms of control but of management and that is what I believe farriers should be best at, managing hooves.

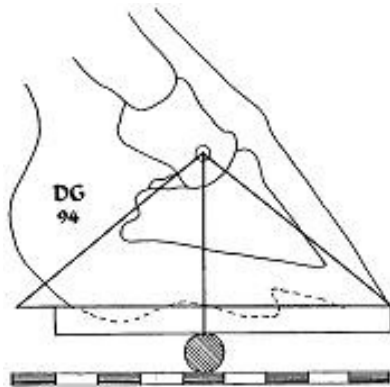


Fig 1: 'The one and an eighth theory'

Once the hoof has been trimmed, and we have taken a measurement from the bulbs of the heels to the anterior of the toe, we can divide the hoof into nine equal sections. The length of eight of those sections will provide us with a guide that will determine an ideal shoe length.

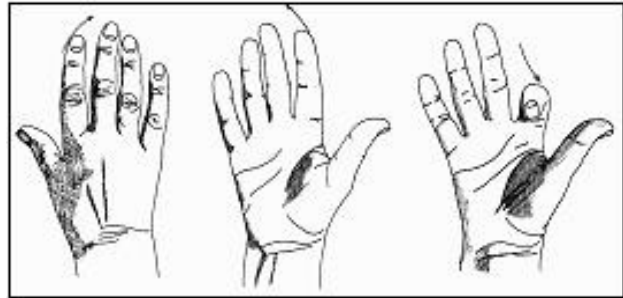


Fig 2. A demonstration of how ginglymus joints control the direction of movement.

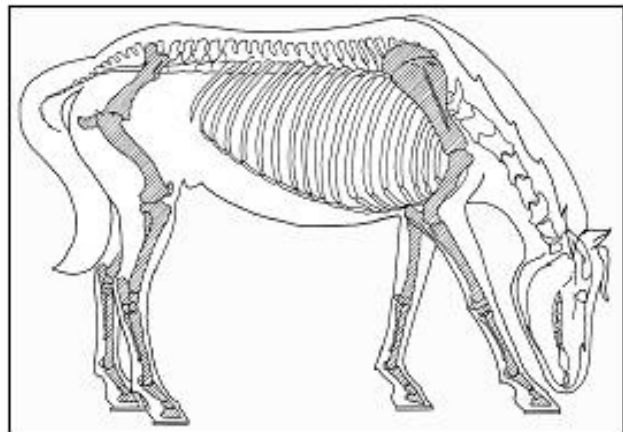


Fig 3a. The grazing stance adapted from Rachel Page Elliott's 'The New Dogsteps'.

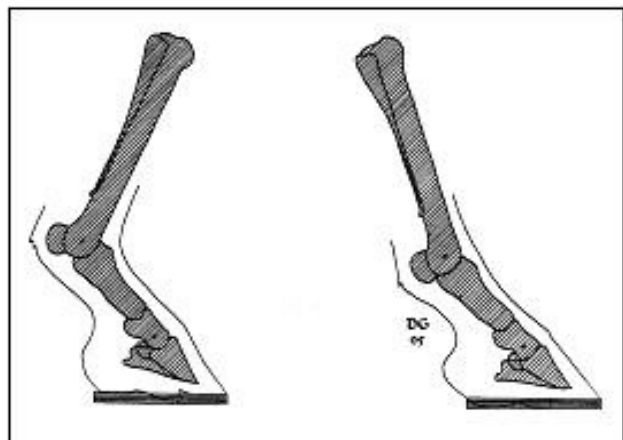


Fig 3b. Schematic diagram displaying the skeletal structure, showing an upright and flat hoof conformation.

Suggested sources of additional information

Miles on the Horse's Foot (1845) By William Miles, ESQ

Animals in Motion (1887) By Eadweard Muybridge

The Practical Horseshoer (1890) By M. T. Richardson

Points of the Horse. A treatise on the conformation, movements breeds and evolution of the horse (1893) By M. Horace Hayes, FRCVS

Horseshoeing (1897) By Anton Lungwitz. Translated by John W. Adams

The Horse in Action (1954) By Henry Wynmalen and Michael Lyne

The Design of Cam mechanisms & Linkages (1968) By Samuel Molian

Horseshoeing Theory and Hoof Care (1977) By Leslie Emery, Jim Miller and Nyles Van Hoosen, DVM

The Mechanics of the Horse (1981) By James R. Rooney, DVM

The New Dogsteps (1983) By Rachel Page Elliott

Cattle Footcare and Claw Trimming (1985) By E. Toussaint Raven, DVM

Proper Balance Movement: A Diary of Lameness (1986) By Tony Gonzales

Veterinary Notes for Horse Owners: An Illustrated Manual of Horse Medicine and Surgery 17th Edition (1987) By Captain M. Horace Hayes, FRCVS; Revised by Peter D. Rossdale, PhD FRCVS

Equine Lameness (1988) By G. Wyn-Jones;

Shoeing for Performance (1989) By Haydn Price and Rod Fisher

On the Horse's Foot, Shoes and Shoeing (1990) By Henry Heymering

Articles of particular interest

Gene Freeze: Are Your Horse's Feet Correctly Balanced? (1983) By Susan Harris

Laterality in the Gallop Gait of Horses (1987) By Nancy R. Duel, MS, PhD and L. M. Lawrence

Pre-Navicular Syndrome: Results of a study into its diagnosis and treatment (1987) By Mark Caldwell, FWCF

Equine Asymmetrical Dexterity or, The Preferred Lead Syndrome (1989) By Ernie Gray

Hoof Balance: Definition and Measurement with Respect of Hoof Balance (1990) By Don Birdsall

Club Foot (1993) By Linda B. Merims Waltham, MA

Evaluating the Shoeing and Associated Hoof Problems of Household Cavalry Horses (1994) By I. Bell, FWCF

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