

## Reducing Injury Risk in Horses

Aside from direct trauma, there are two main causes of joint damage in horses. A normal load on an abnormal joint, or an abnormal load on a normal joint.

This damage can be acute (such as sprain or fracture) or chronic (smaller, less obvious injuries occurring over a longer period leading to tissue degeneration and osteoarthritis). Damage may also range from mild (requiring a period of rest and medication) to severe (career- or even life-limiting).

Fortunately, much is now known about factors influencing these two situations, meaning we can take steps to reduce the risk of injury, and prolong the health of our horses' joints.

### Why avoid injury?

- Equine welfare
- Cost of veterinary assessment and care
- Time off work
  - Increased cost and labour of box rest
  - Unproductive animal
  - Disappointed rider
  - Additional workload for other horses
- Increased risk of re-injury/ osteoarthritis in future

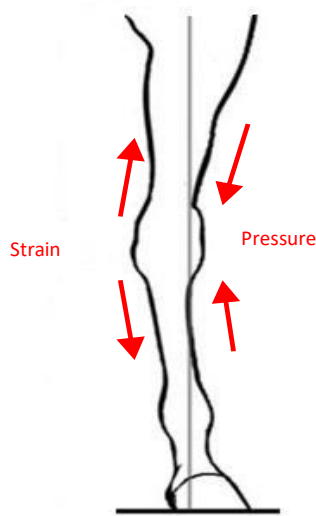
### Why relevant to RDA horses?

- Equine welfare
- Wise use of charity resources
  - Money
  - Staff/ volunteer time
  - The horse
- Potentially unbalanced riders- may overload individual limbs and cause abnormal compensatory muscle tension
- Range of disciplines

### Normal loading of abnormal joints

It is widely accepted that no horse has “perfect” conformation. Also, a minor conformational defect does not necessarily guarantee a horse’s career will be limited by injury. However, the presence of one or more abnormal joints may limit the work a horse can safely undertake. This should always be taken into consideration when acquiring a horse for RDA use and deciding on its role.

A joint with abnormal conformation will be unevenly loaded. As a general rule bones and cartilage on the inside of the angle are under increased pressure, and ligaments on the outside of the angle are under increased strain when compared to a normal joint under the same load.



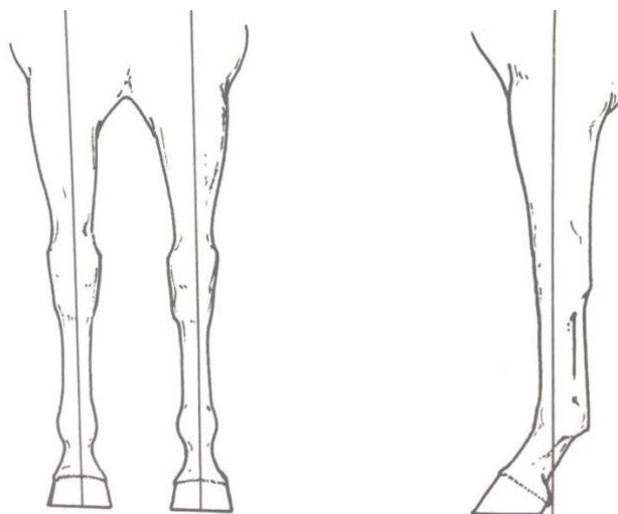
(Left fore limb viewed from front)

### How can we reduce injury risk?

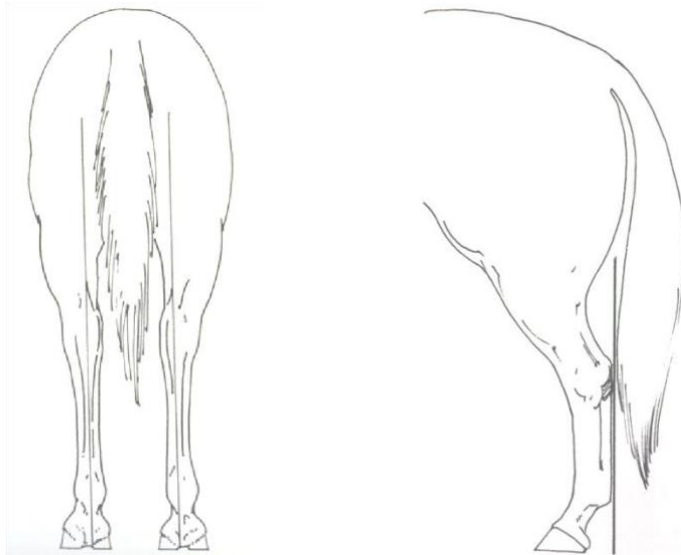
- Veterinary assessment of new horse before RDA use
- Pre-purchase examination (compulsory when using RDA funds to purchase a horse)
- Horses with significant conformational defects should not be used for RDA activities
- Minor conformational defects should be identified and taken into account when allocating work and calculating carrying weights

Assessing conformation and injury risk is complex. However, there are some easy rules of thumb to follow:

- Forelimbs should appear straight from the front and balanced from the side (line from tuber spina of scapula).



- Hind limbs should appear straight from the back, with back of cannon vertical under point of buttock.



- Pastern angle of 45-50° in forelimbs, 50-55° in hind limbs
- Limbs should be symmetrical

### **Abnormal loading of normal joints**

Whilst no horse has “perfect” conformation, a horse free from significant developmental musculoskeletal abnormalities has the best chance of a successful injury free career. However, it is still important to manage these animals correctly.

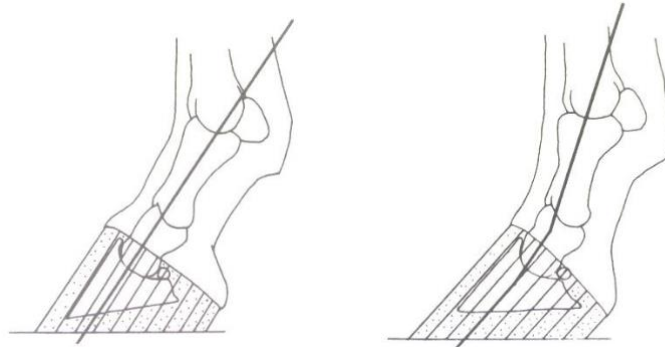
### **How can we reduce injury risk?**

- **Carrying weight limits**
- **Correct body condition**  
A carrying weight of 10% of BW in an overweight horse will be heavier than 10% of its lean weight. An overweight horse is carrying several kilograms of fat- already loaded before we add tack and rider!
- **Good foot balance**
- Appropriate workload and training
- Warm up before working
- Good surface maintenance

## Foot balance rules of thumb

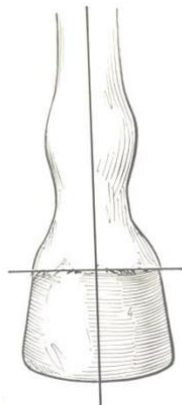
### Dorsopalmar ("front to back") balance: hoof pastern axis should be straight

Heel present and parallel to dorsal wall



Horses with a "broken back" hoof pastern axis or an acquired "long toe, low heel" conformation (shown above on the right) are known to be at greater risk of injuries including heel bruising, navicular disease and flexor tendon injuries even with a small deviation from alignment. Due to normal hoof growth patterns a delay in shoeing will lead to this conformation meaning regular farrier appointments are vital. Mild "broken forward" axes are generally better tolerated, though more extreme angles increase the risk of coffin joint disease and arthritis.

### Mediolateral ("side to side") balance



A line down the front of the horse's leg and another across the coronary band should be perpendicular. The coronary band and edge of the hoof should be parallel. Deviation from this can cause overloading of tissues in joints the foot causing potentially career ending injuries.

### Shoe supporting heels

Heels overhanging the back of a shoe can indicate more frequent shoeing or a foot balance reassessment are needed. Many problems can be improved with remedial farriery, and prevention is better than cure.

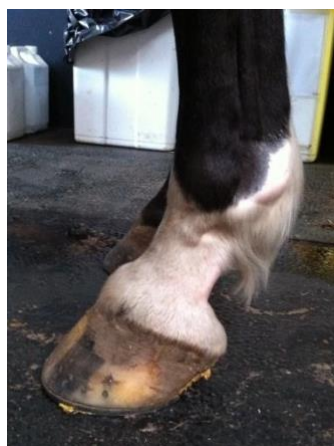
**Case study 1:**



1. What part of the limb is abnormal?
2. What abnormalities are present?
3. Is the problem mild, moderate or severe?
4. Can we correct this abnormality? How?
5. Would you expect this horse to be lame?
6. Should this horse be used for RDA work?
7. If so at what level?



**Case study 2:**



1. What part of the limb is abnormal?
2. What abnormalities are present?
3. Is the problem mild, moderate or severe?
4. Can we correct this abnormality? How?
5. Would you expect this horse to be lame?
6. Should this horse be used for RDA work?
7. If so at what level?

**References**

All diagrams taken or adapted from Adams' Lameness in Horses, Fifth Edition (1998), Ted. S. Stashak.

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