



WELL TREATMENT OF SPORT HORSES INJURY PREVENTION AND EARLY DETECTION

Prof. Didier Serteyn
Dr. Jean-Philippe Lejeune



Bruxelles, the 21th of February 2024.



Well treatment of sport horses

Injury prevention and early detection



Didier Serteyn apologizes for not being able to be here today due to a broken leg ...

Fortunately, the horse is fine and full of energy!





Well treatment of sport horses

Injury prevention and early detection



INTRODUCTION

- Intense exercise significantly increases risk of injuries in equine athletes
- Our mission is to reduce these risks through a better understanding of equine exercise physiology

→ **Prevention**, early detection and sports medicine in relation with adequate training





2 main areas of action:

- Physical condition
- Locomotory disorders



Means of action:

- Longitudinal clinical examination
 - Objective measurements and diagnostic tools
 - Discussion with rider, trainer, farrier, ...
- ➔ Optimization of locomotion





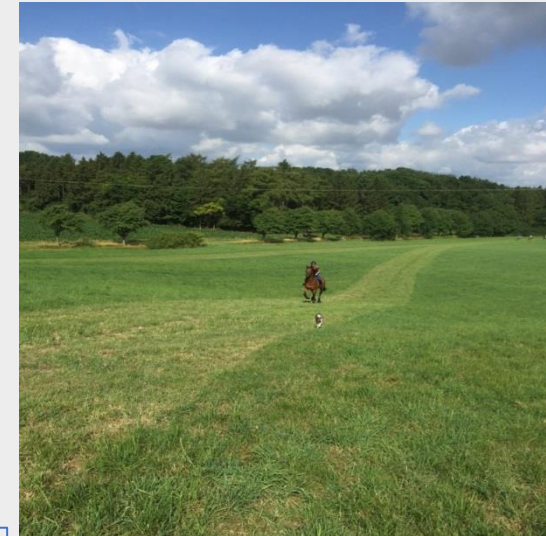
Well treatment of sport horses

Injury prevention and early detection



EVALUATION OF PHYSICAL CONDITION

- Adequacy of sporting skills and disciplines
- Physical condition is even more crucial for certain disciplines such as endurance and eventing.
- Establishment of the physical preparation program
- Checking the effectiveness of training (undertraining?)
- Early diagnosis of overtraining before injuries like fracture, tendinitis



PhD Thesis K. Kirsch

To identify objective factors of training level

- Training log
- GPS data
- Hearth rate
- Blood lactate

LAC₁ (1 min post)
LAC₁₀ (10 min post)



204 horses
862 cross country courses

EVALUATION OF PHYSICAL CONDITION:

- Heart rate and blood lactate measured during interval training sessions provide reliable fitness parameters
- Their regular monitoring can give an idea of the effectiveness of the training
- High-level “performing” horses have above-normal body condition
- The horse must be evaluated in its entirety and its own evolution rather than comparing to other individuals or limiting oneself to the analysis of a particular parameter.



This is valid in all disciplines: a tired, stiffened musculature will no longer be able to absorb the constraints of movements. This is at this moment that lesions can appear in the tendons and joints and that accidents occur.



Well treatment of sport horses

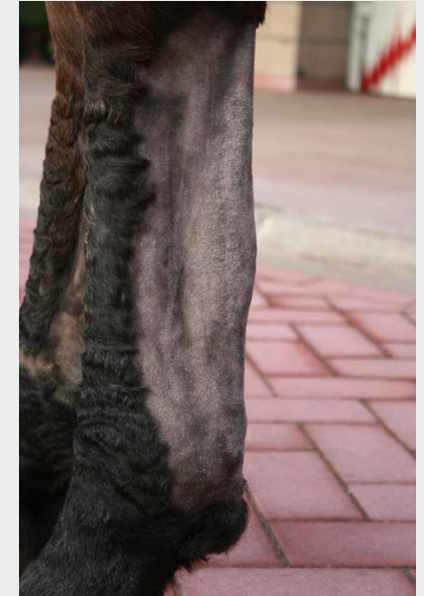
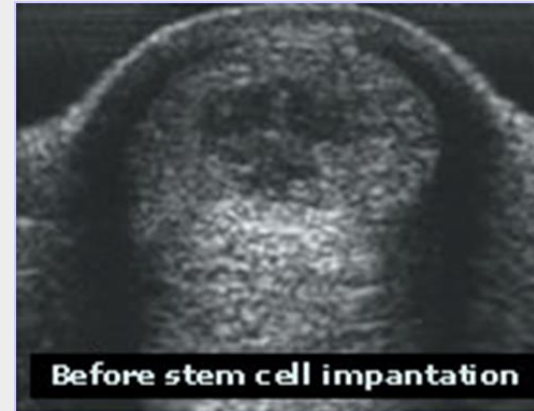
Injury prevention and early detection



PREVENTION OF LOCOMOTORY DISORDERS



Prevention instead of treatment




PREVENTION OF LOCOMOTORY DISORDERS

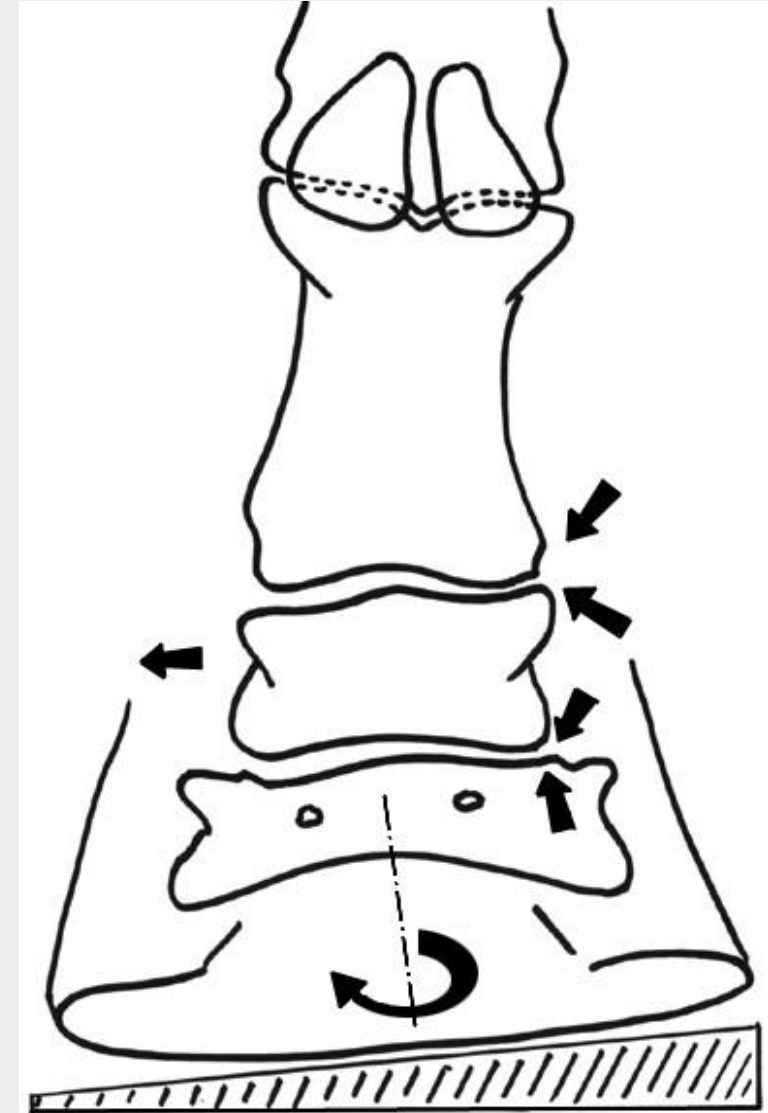
Trimming optimization

A horse is properly trimmed when the joint surfaces of the proximal and distal interphalangeal joints are parallel to each other, at the moment when the horse is in maximum support (maximum mechanical joint stresses)

- Uneven terrain
- Hard floors
- Trimming errors
- Distance → 160 km

 repeated mechanical stress

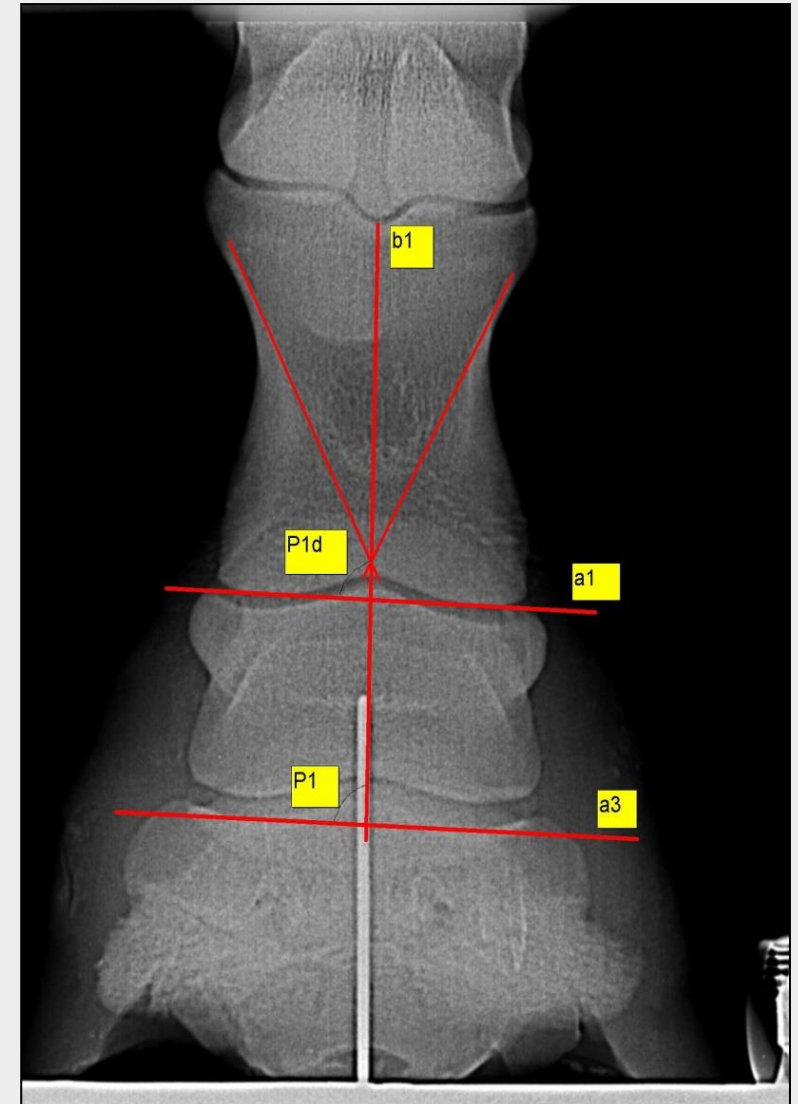
 interest in optimizing trimming



Static approach of bearings assessment



Determination of optimal trimming
according to the individual's own
conformation



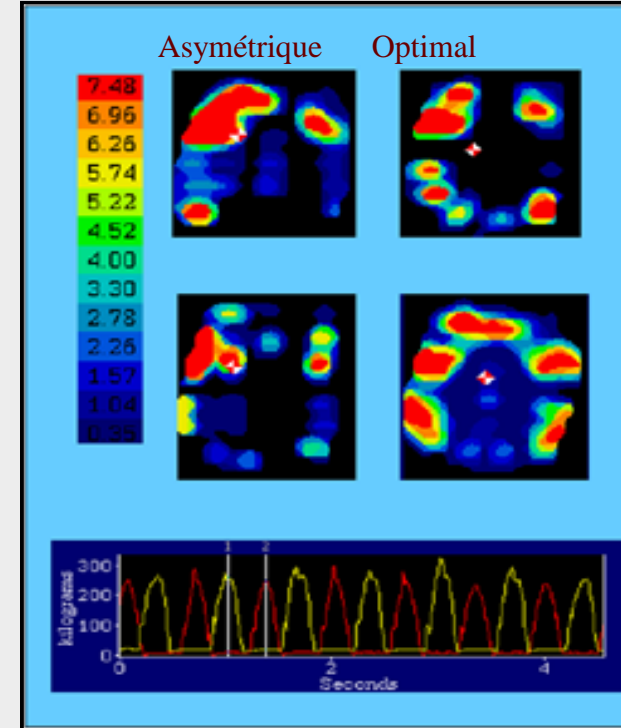
Dynamic approach of bearings assessment

F-Scan system:
pressure sensors
under the hoof



Example:

Comparison of
asymmetrical trimming
and optimal trimming



Objectives :

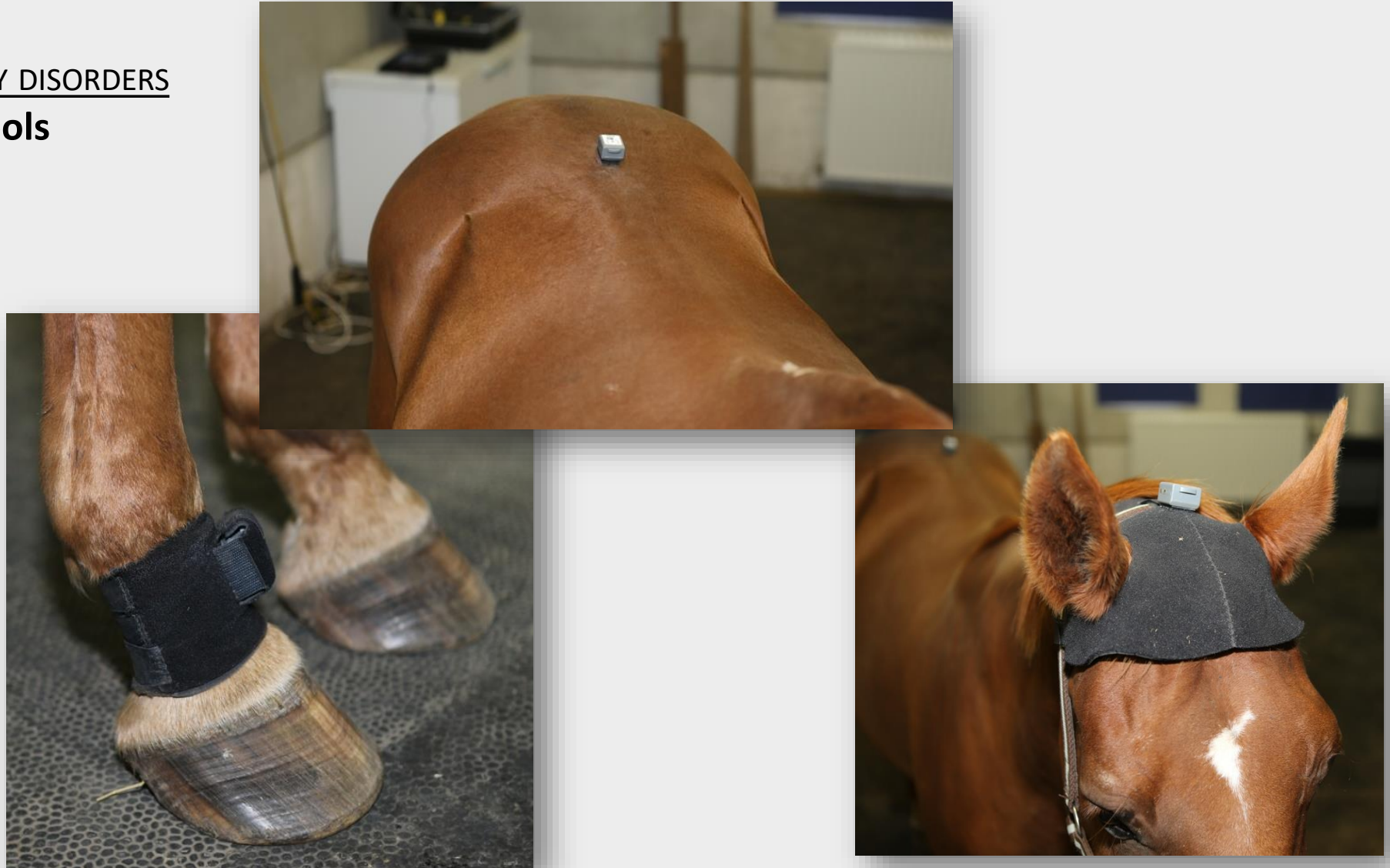
- dynamic verification of optimal trimming,
- equal distribution of forces when wheightbearing foot
- **simple and repeatable external reference to reproduce optimal trimming**



PREVENTION OF LOCOMOTORY DISORDERS

Early detection tools

- Objective data
- Longitudinal follow-up
- Comparison after a possible treatment or orthopaedic correction





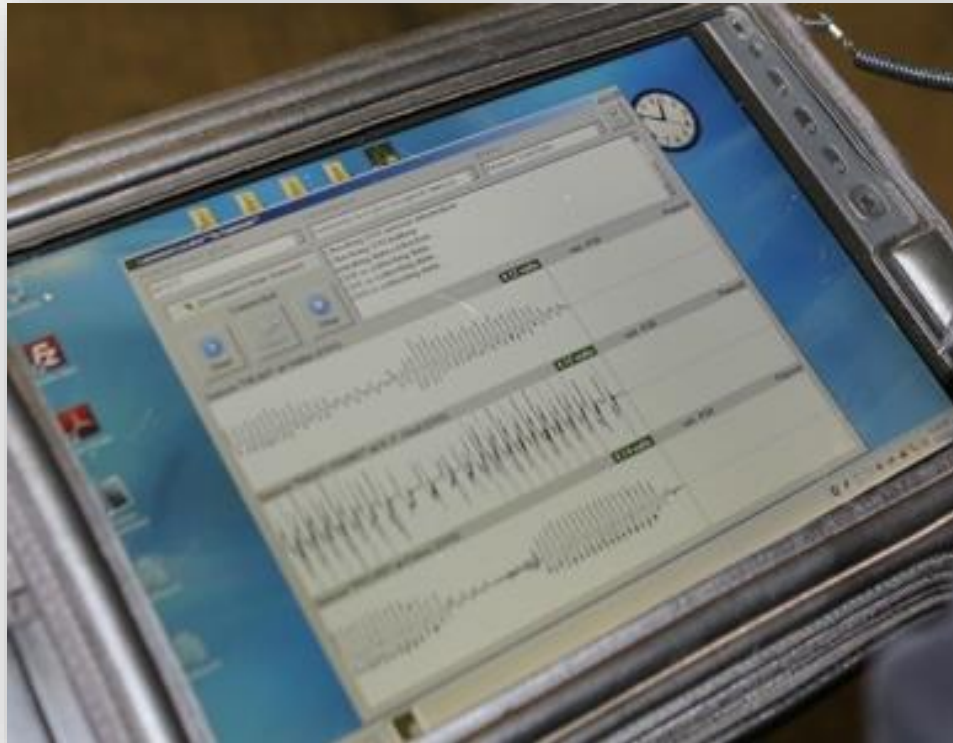
Well treatment of sport horses

Injury prevention and early detection



PREVENTION OF LOCOMOTORY DISORDERS

Early detection tools





Well treatment of sport horses

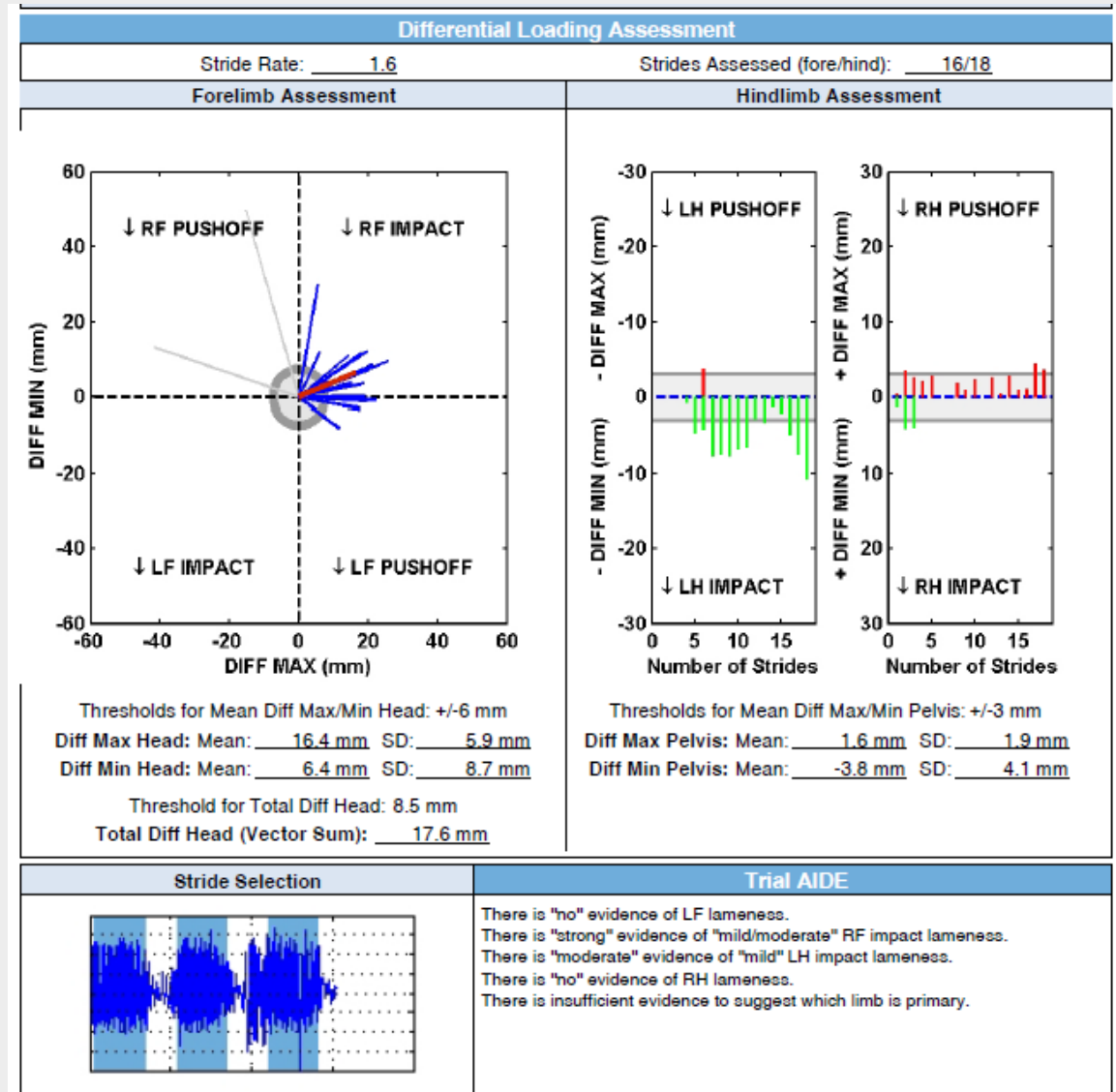
Injury prevention and early detection



PREVENTION OF LOCOMOTORY DISORDERS

Early detection tools

- Front limbs, hind limbs
- Impact, push off phase



PREVENTION OF LOCOMOTORY DISORDERS

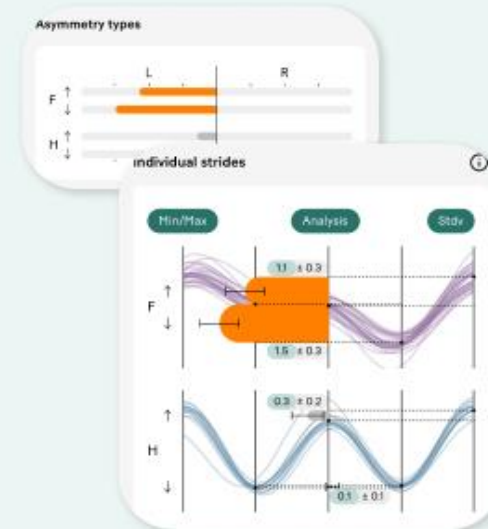
Early detection tools

- Video analysis
- AI technology
- Possible access to record videos at the stable and send to the veterinarian

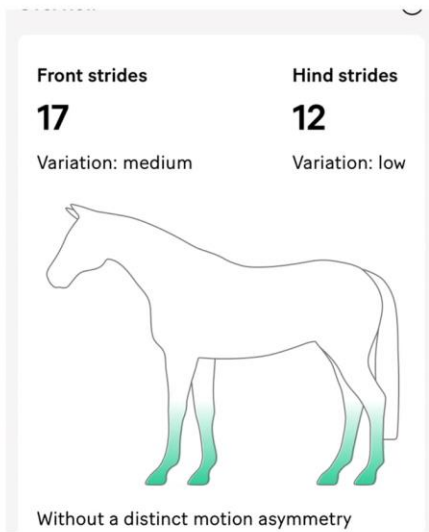


Gulliver

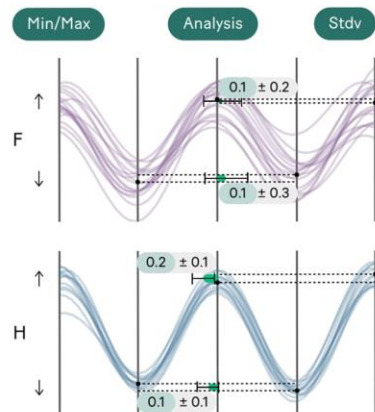
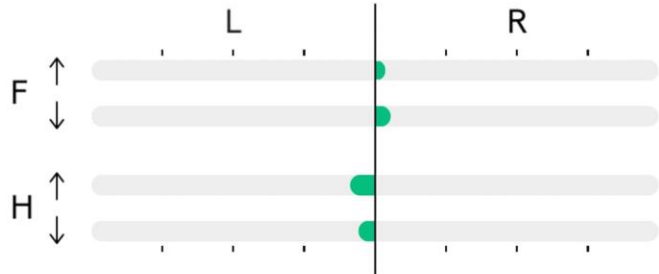
7 recordings



Periodic check-up, longitudinal evaluation



Asymmetry types





Well treatment of sport horses

Injury prevention and early detection



Conclusion

- The success of a sporting career for a rider-rider/horse couple is a team work. They are surrounded by professionals who must work together: farrier, veterinarian, instructor, groom, etc.
- Several aspects can influence the health of the musculoskeletal system and performance: trimming, shoeing, physical condition, etc.
- Training programs are often empirical. Studies are carried out to monitor physical condition objectively and advise instructors and riders regarding their sporting deadlines and prevent failures of the musculoskeletal system.
- Veterinary medicine is evolving: analysis and measurement tools, regenerative medicine for example
- Preserving a horse to allow it sporting longevity must be one of our priorities. All science and medicine will not be able, and don't have to counteract the consequences of excessive uses that do not respect the intrinsic qualities and limits of the horse and its level of preparation.



Well treatment of sport horses

Injury prevention and early detection



The equine athlete is above all a simple horse whose rhythm and natural needs must be respected.

