Case study

Assessing a basic front limb lameness using the Sleip app

Gulliver

7 recordings

Sleip

Horse profile and background

Gulliver has been experiencing lameness in the left front leg for several months.

- Breed: KWPN (Dutch Warmblood)
- Gender: Gelding
- Age: 9 years old
- Discipline: Dressage
- Training Level: Prix St. George (PSG)

The horse has been hand-walked and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) have been administered. There has been a minor improvement following the treatment.

Static examination
Inspection/palpation: no abnormalities.

Dynamic examination
The horse appears sound and coordinated at walk.

Straight line trot
Lameness is evident in the left front limb with severity rated at 2-3 out of 5 on the lameness scale.

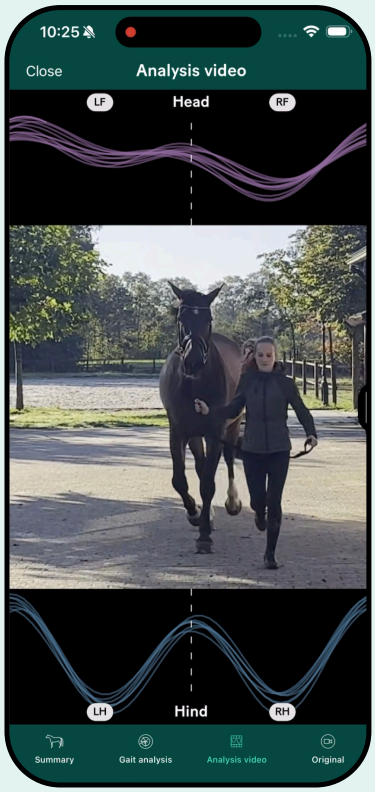
Longeing trot
Increased severity on the left circle. On the longe, the horse displayed a lameness of 2 out of 5, on both hands. No significant change of the lameness after longing.

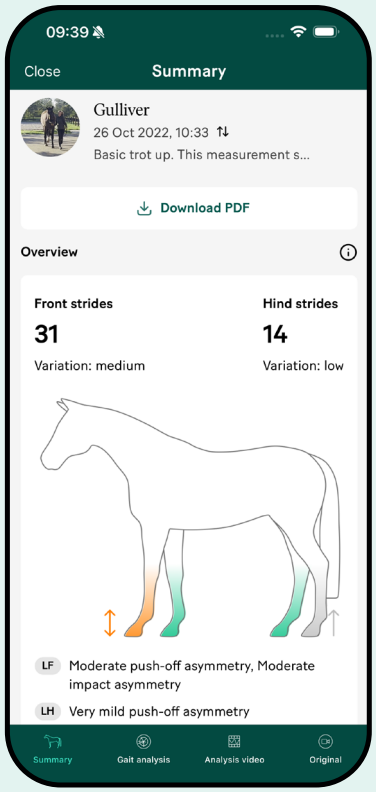
Observations after blocking
Visual assessment shows improvement after an abaxial block of the left front.

Straight line recording with Sleip

Examination surface: hard

Scan to access full case study with analysis videos and results for straight line and longeing.



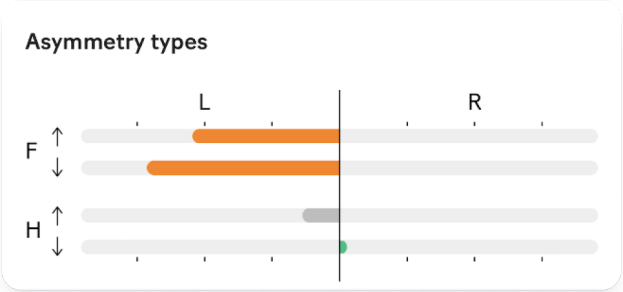


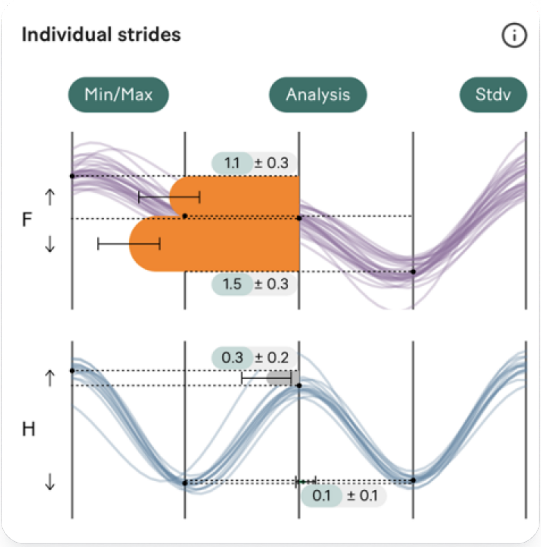
Data quality assessment
The overview gives you an indication of the quality of the data collected in your recording. It shows you the number of strides analysed and the variation in the stride pattern. The less variation between strides, the more certain the analysis. The more strides collected, the more certain the analysis. Around 20 analysed strides will give you a reliable measurement.

31 front limb strides have been included in this analysis. The variation noted between these strides is “medium”, which is acceptable. For the hind limbs, 14 strides have been captured, which is on the low side, but acceptable as the variation in the stride pattern is “low”.

Moderate assymetries on the left front limb

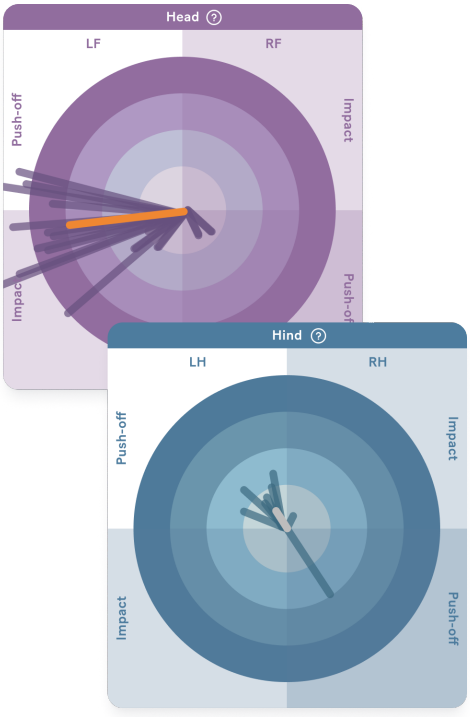
The analysis shows moderate asymmetries on the left front limb, both in the push-off and in the impact phase, as indicated by the arrows up and down.The horse is not applying as much force or weight on the left front limb when it comes into contact with the ground (impact asymmetry) and not using it as strongly to push off from the ground (push-off asymmetry), compared to the right front limb.





Quantified asymmetries
In the individual strides section, the asymmetry is quantified as 1.1 (with a standard deviation of 0.3) in the push-off phase and 1.5 (with a standard deviation of 0.3) in the impact phase. There is also a very mild asymmetry in the push-off phase in the left hind

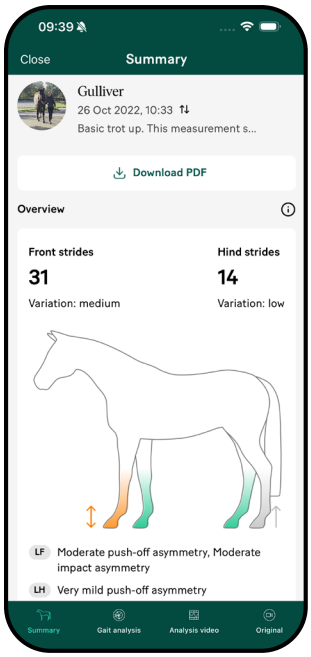
Consistency
Looking at the gait analysis plots to the right, the lameness shows a very consistent pattern in the left front; all strides are clustered together and the amplitude of the asymmetry (illustrated by the length of the lines) is moderate. In the hindlimbs there is also a very consistent asymmetry, but of a very low amplitude. One outlier is seen in the hindlimbs, in the right hand push-off quadrant.

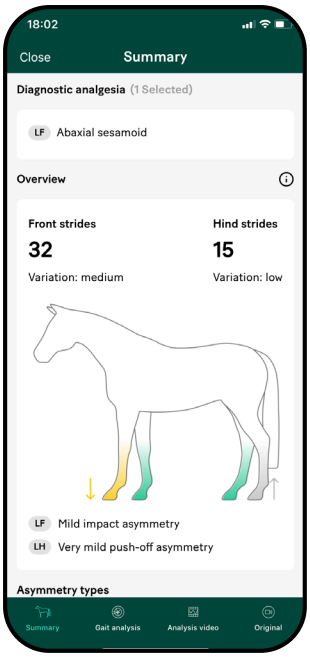


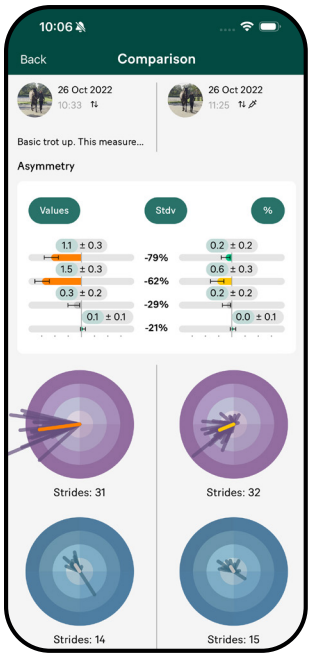
Diagnostic analgesia

After the abaxial nerve block on the left front, the orange left front limb changed into a yellow limb and the the arrow up disappeared, meaning the asymmetry decreased and the push-off component disappeared.

No further blocking was performed due to the clear improvement and the anamnesis of a chronic lameness.







Before: baseline measurement

After: measurement after block

Data comparison
Quantitatively, there's a significant improvement of 79% in the push-off and 62% in the impact component of the asymmetry in the left front after the abaxial block compared to baseline. The push-off asymmetry decreased from 1.1 to 0.2 (with a standard deviation of 0.2) and the impact asymmetry decreased from 1.5 to 0.6 (with a standard deviation of 0.3).

In the gait analysis circle graphics we can clearly see that the stride-to-stride variation in the front increased while the amplitude of asymmetry decreased following the abaxial block. This is illustrated by the lines pointing in multiple directions instead of being clustered together closely. An increasing stride-to-stride variation is often seen when horses are trotted up following a positive block.

Comments and conclusion

The Sleip measurements show a clear LF asymmetry with a significant decrease after the abaxial block, which is in line with the findings of the diagnostic imaging.

There is both skeletal damage (fracture of the coffin bone) and soft tissue damage (desmopathy of the medial collateral ligament of the coffin joint).

Radiology
• Fracture of the coffin bone, located medially

MRI
• Severe sclerosis associated with diffuse fluid based pathology in the medial ungual cartilage
• Associated most likely with a fracture at its junction to the ipsilateral palmar process of the distal phalanx
• Moderate diffuse fluid based pathology at the medial palmar process of the distal phalanx
• Mild to moderate diffuse desmopathy of the medial collateral ligament of the distal interphalangeal joint