EQUINOSIS
VETERINARY SERVICES

Equinosis Q
Use Cases

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Trial Report

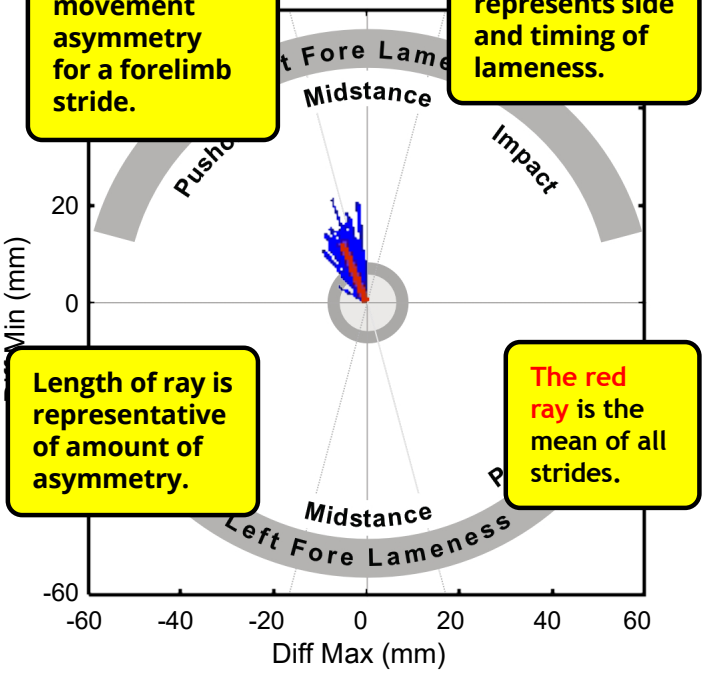
Case #:
Owner: Test
Horse: Horse 5

Trial: Straight Line
Date: Wednesday, June 5, 2019 at 1:31 PM
Surface: Asphalt
Blocks:
Attending:
Analysis Settings: Default - Delta = 0.1

Quantification of Asymmetry

Stride Rate: 1.6
Strides Assessed (fore/hind): 39/37

Forelimb Strides



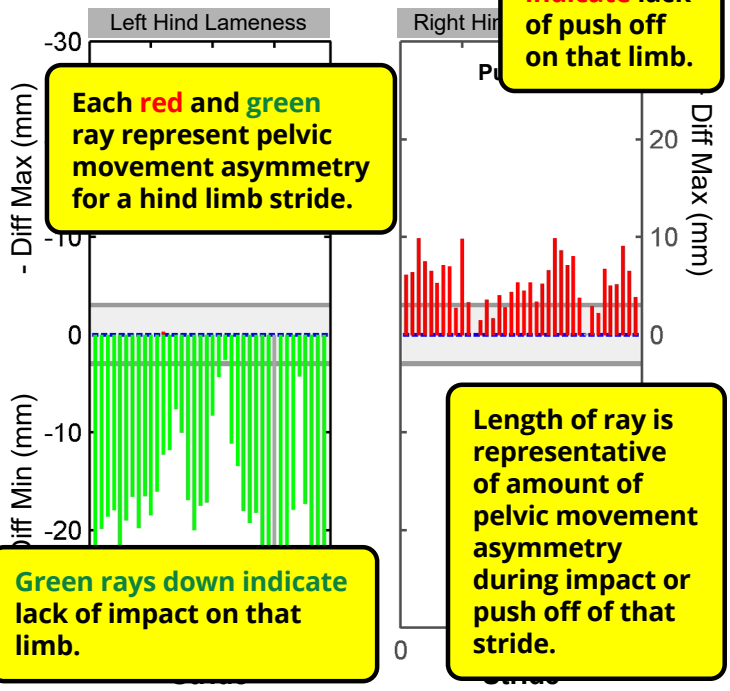
The blue rays represent head movement asymmetry for a forelimb stride.

Each quadrant represents side and timing of lameness.

Length of ray is representative of amount of asymmetry.

The red ray is the mean of all strides.

Hindlimb Strides



Each red and green ray represent pelvic movement asymmetry for a hind limb stride.

Red rays up indicate lack of push off on that limb.

Green rays down indicate lack of impact on that limb.

Length of ray is representative of amount of pelvic movement asymmetry during impact or push off of that stride.

Lameness Metrics

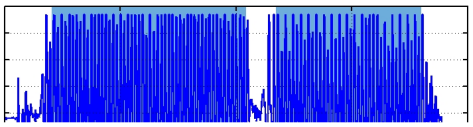
Ref Range for Max/Min Head:	+/-6 mm			
Diff Max Head:	Mean:	-5.2 mm	SD:	2.3 mm
Diff Min Head:	Mean:	12.3 mm	SD:	4.5 mm
Ref Range for Total Diff Head:		8.5 mm		
Total Diff Head (V				

Ref Range for Max/Min Pelvis:	+/-3 mm			
Diff Max Pelvis:	Mean:	5.3 mm	SD:	2.5 mm
Diff Min Pelvis:	Mean:	-17.1 mm	SD:	6.6 mm

Q Scor

Mean measurements of all strides (and standard deviations that indicate the stride to stride variability).

Stride Selection



Trial AIDE

There is "no" evidence of LF lameness.
There is "strong" evidence of "mild" RF pushoff lameness.
There is "strong" evidence of "moderate/severe" LH impact lameness.
There is "strong" evidence of "mild" RH pushoff lameness.
There is insufficient evidence to suggest which limb is primary.

Straight line trial AIDE (auto-interpretation and degree of evidence) reports strength of evidence for lameness (taking into account stride to stride variability) in each limb and a relative amplitude (severity). If multiple limb (fore and hind) lameness is present, consideration of compensatory patterns may suggest a primary limb depending on distribution, pattern (timing), amplitude and variability.

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Lunging Comparison Report

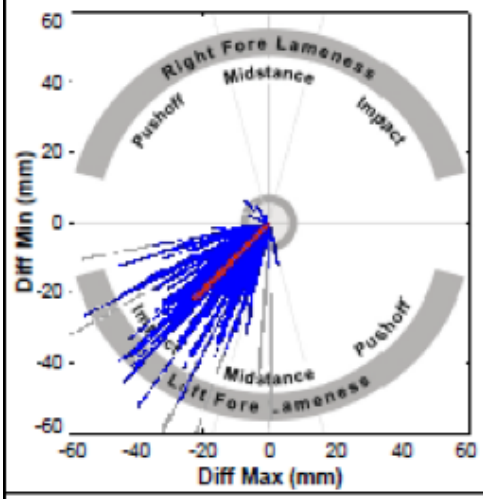
Case #:
Owner:
Horse:

	Trial 1:	Trial 2:
Trial 1:	Lunge Left	**Trial 2:** Lunge Right
Date:	Friday, August 25, 2017 at 11:26 AM	**Date:** Friday, August 25, 2017 at 11:29 AM
Attending:		**Attending:**
Surface:	Loose sand	**Surface:** Loose sand
Blocks:		**Blocks:**

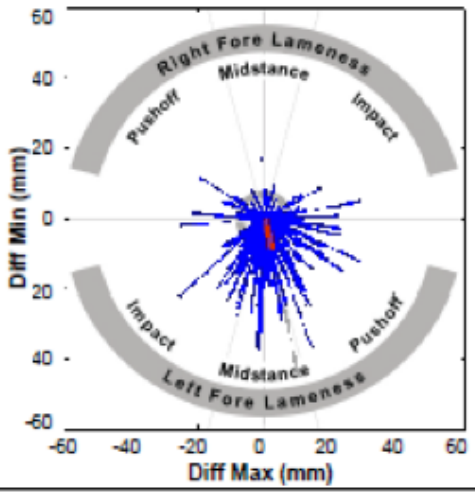
Quantification of Asymmetry

Default - Delta = 0.1	Analysis Settings	Default - Delta = 0.1
1.5	Stride Rate	1.5

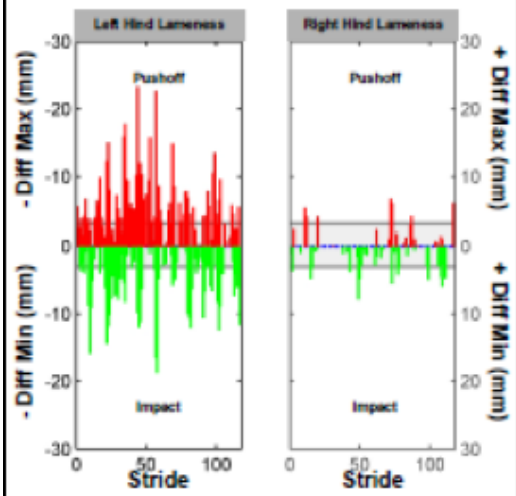
Forelimb Assessment



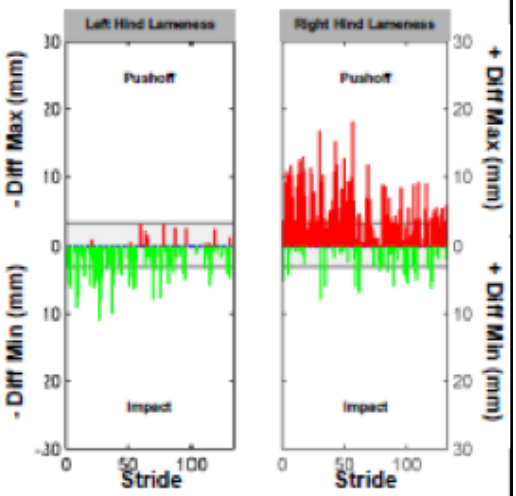
Diff Max Head			
-22.6 mm	Mean:	2.3 mm	
11.8 mm	SD:	10.5 mm	
Diff Min Head			
-21.6 mm	Mean:	-8.9 mm	
11.6 mm	SD:	10.7 mm	
Total Diff Head (Vector Sum)			
31.3 mm		9.2 mm	
Strides Assessed			
110		131	



Hindlimb Assessment



Diff Max Pelvis			
-4.2 mm	Mean:	4.8 mm	
5.4 mm	SD:	4.3 mm	
Diff Min Pelvis			
-3.0 mm	Mean:	-1.0 mm	
5.2 mm	SD:	3.7 mm	
Strides Assessed			
117		132	



Lunge AIDE

There is evidence of LF impact lameness lunging to the left. There is evidence of LF pushoff lameness lunging to the right. However, on soft surfaces the head movement pattern lunging to the right is seen in some normal horses.

There i
to right

Lunging (comparing lunge left to lunge right) - Asymmetric head and pelvic movement is common in normal horses lunging due to torso tilt toward the center of the circle. Because of the increased variability between horses, circle size, and surface characteristics, there are no established reference ranges. However, inertial sensors can be used to identify unexpected patterns of asymmetry based on surface characteristics. AIDE statements describe evidence of lameness based on amplitude, pattern (impact or push off) and large differences between left and right.

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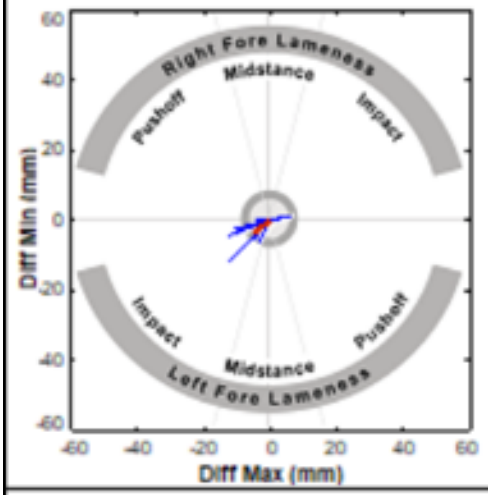
Flexion Comparison Report

Case #:
Owner:
Horse:

	Trial 1:	Trial 2:
Trial	Before Flexion/Manipulation	LH Distal Limb Flexion
Date:	Thursday, November 9, 2017 at 12:30 PM	Thursday, November 9, 2017 at 12:38 PM
Attending:	Dr. Deborah Sieber	Dr. Deborah Sieber
Surface:	Packed dirt	Packed dirt
Blocks:		

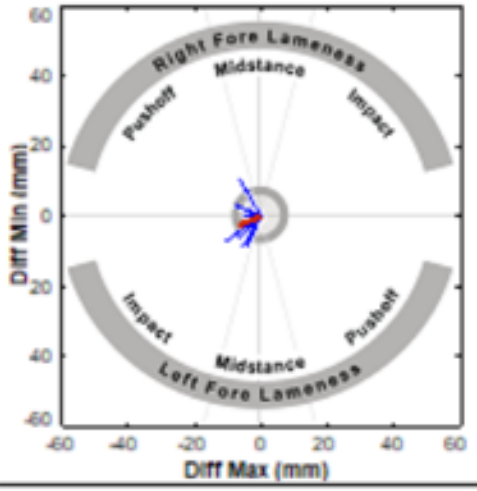
Quantification of Asymmetry

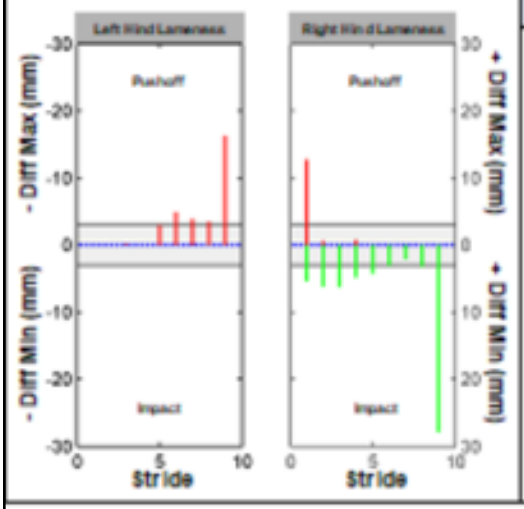
Default - Delta = 0.1	Analysis Settings	Default - Delta = 0.1
1.4	Stride Rate	1.4



Forelimb Assessment

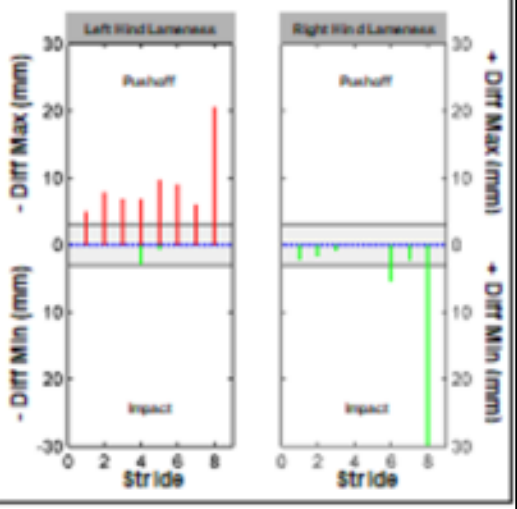
Diff Max Head			
-4.9 mm	Mean:	-6.7 mm	
7.0 mm	SD:	2.1 mm	
Diff Min Head			
-3.6 mm	Mean:	-2.5 mm	
4.3 mm	SD:	7.5 mm	
Total Diff Head (Vector Sum)			
6.1 mm		7.1 mm	
Strides Assessed			
8		7	





Hindlimb Assessment

Diff Max Pelvis			
-1.9 mm	Mean:	-9.0 mm	
7.5 mm	SD:	4.9 mm	
Diff Min Pelvis			
7.0 mm	Mean:	5.1 mm	
7.9 mm	SD:	11.1 mm	
Strides Assessed			
9		8	



Flexion AIDE

The LH flexion test caused a moderate LH pushoff lameness. The LH flexion test did not change the RH impact lameness.

Flexion (and Manipulation) Comparisons - Compare pre and post flexion or other manipulation test trials to assess response in the flexed (or standing) limb. The report on the right is after a LH distal limb flexion. Notice the rays got longer on the LH, indicative of a positive response.

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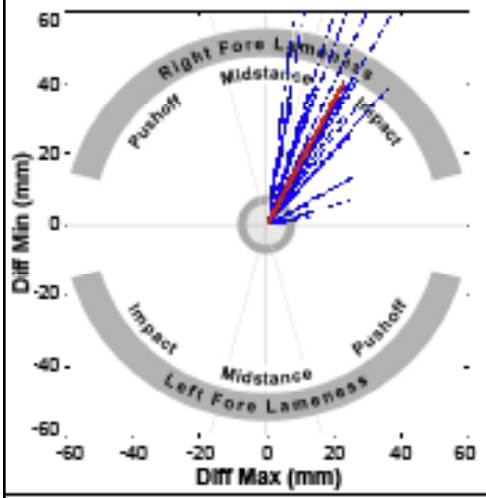
Block Comparison Report

Case #:
Owner:
Horse:

Trial 1:	Straight Line	Trial 2:	Straight Line
Date:	Friday, September 6, 2019 at 5:52 PM	Date:	Friday, September 6, 2019 at 7:22 PM
Attending:		Attending:	
Surface:	Asphalt	Surface:	Asphalt
Blocks:		Blocks:	RF = ASB

Quantification of Asymmetry

Manual - Delta = 0.3	Analysis Settings	Default - Delta = 0.2
1.5	Stride Rate	1.8



Forelimb Assessment

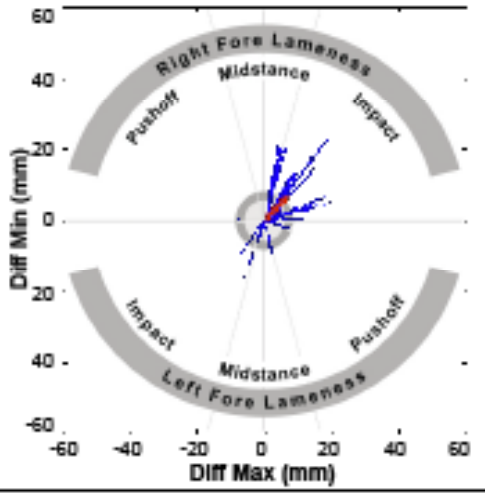
Thresholds for Mean Diff Max/Min
+/-8 mm

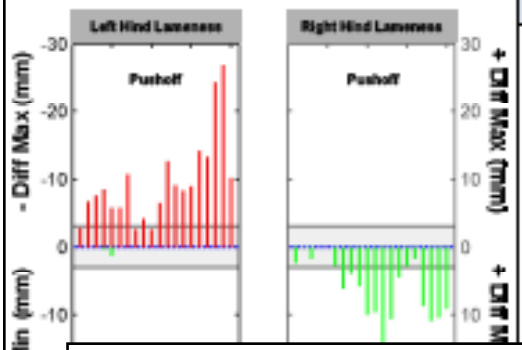
Diff Max Head
23.1 mm Mean: 7.0 mm
8.9 mm SD: 7.4 mm

Diff Min Head
40.9 mm Mean: 7.1 mm
30.6 mm SD: 10.3 mm

Total Diff Head (Vector Sum)
46.9 mm 9.9 mm

Strides Assessed
20 25





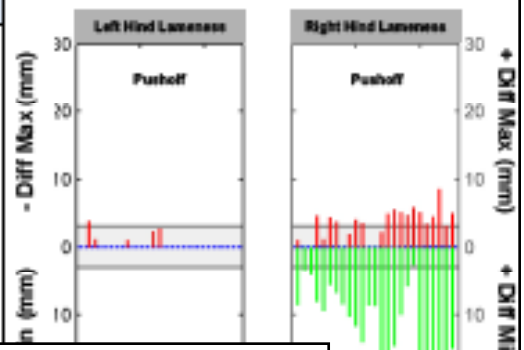
Hindlimb Assessment

Thresholds for Mean Diff Max/Min
+/-3 mm

Diff Max Pelvis
-9.6 mm Mean: 2.9 mm
6.4 mm SD: 3.1 mm

Diff Min Pelvis
5.8 mm Mean: 12.2 mm
.7 mm

Strides
20



This first calculation is the absolute change in the lameness metric (VS or DMax/DMin Pelvis)

(46.9 – 9.9)/46.9 = 79%

The second calculation is the amount of improvement relative to the reference range for the lameness metric.

(46.9 – 9.9)/(46.9 – 8.5) = 96%

Block AIDE

The RF blocking caused a 79% reduction in vertical head movement asymmetry. This is a 96% improvement in the RF lameness.

Blocking Comparison - Compare straight line trials before and after block for easy visual inspection of change. Blocking AIDE calculates percent improvement. This example illustrates a RF lameness before and after an abaxial sesamoid block. In the blocking AIDE, the first calculation is the absolute change in the lameness metric. The second is the amount of improvement toward the reference range.

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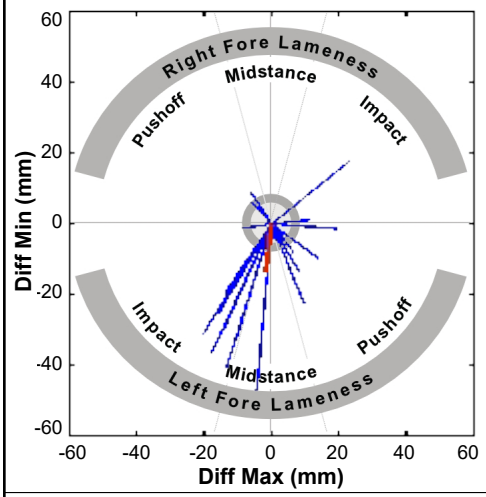
Recheck Comparison Report

Case #:
Owner:
Horse:

	Trial 1	Trial 2
Date:	Friday, September 6, 2019 at 8:15 PM	Thursday, October 24, 2019 at 1:20 PM
Attending:		
Surface:	Asphalt	Asphalt
Blocks:		

Quantification of Asymmetry

Default - Delta = 0.1	Analysis Settings	Default - Delta = 0.2
1.7	Stride Rate	1.4



Forelimb Assessment

Ref Range for Max/Min Head: +/-6 mm

Diff Max Head

-1.8 mm	Mean:	-2.2 mm
11.9 mm	SD:	2.1 mm

Diff Min Head

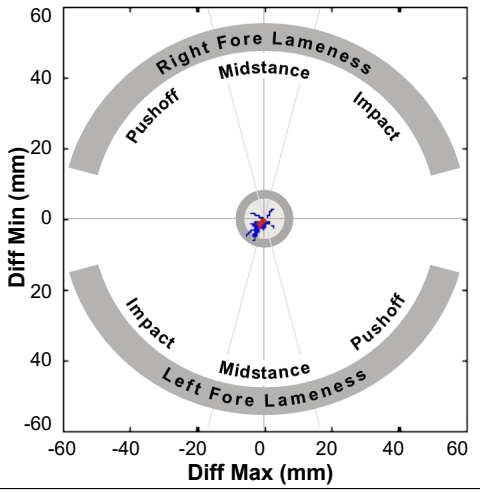
-13.7 mm	Mean:	-1.8 mm
16.7 mm	SD:	2.2 mm

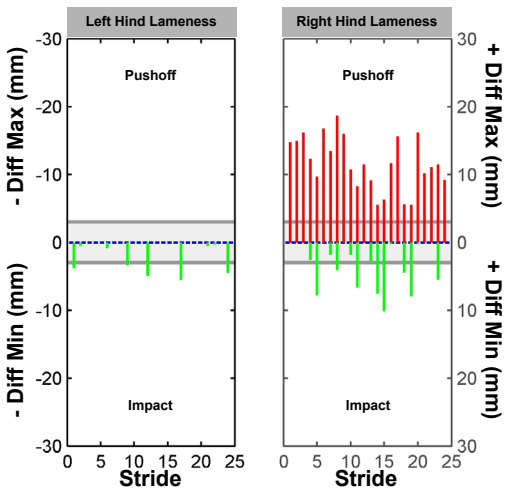
Total Diff Head (Vector Sum)

13.9 mm	2.8 mm

Strides Assessed

24	22





Hindlimb Assessment

Ref Range for Max/Min Pelvis: +/-3 mm

Diff Max Pelvis

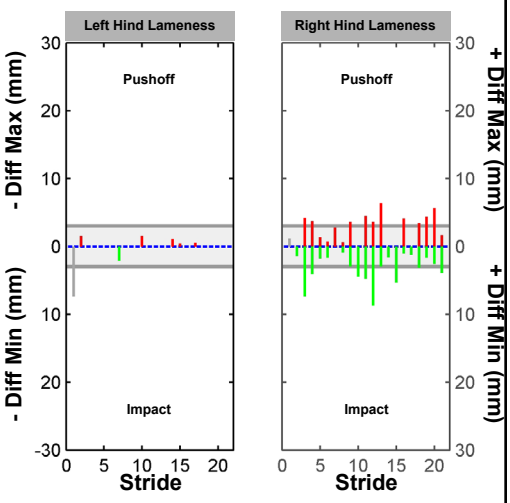
11.7 mm	Mean:	2.3 mm
3.9 mm	SD:	2.4 mm

Diff Min Pelvis

1.6 mm	Mean:	2.9 mm
4.4 mm	SD:	2.4 mm

Strides Assessed

24	20



Recheck AIDE

The LF lameness at time 1 is no longer present at time 2.
The RH pushoff lameness at time 1 is no longer present at time 2.
There was no impact type hindlimb lameness at time 1 or time 2.

Recheck Comparison Report - Compare straight line trials from two different days to assess change. Evaluate treatment or rehabilitation progress. Recheck AIDE provides percent improvement of lameness at time 1 compared to time 2, as well as identifies new lameness not present at time 1.

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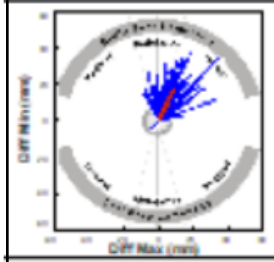
Ridden Evaluation Comparison

Case #:
Owner:
Horse:

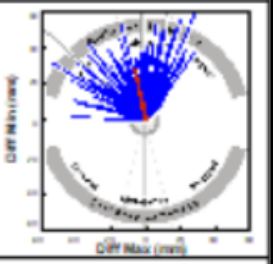
Trial 1:	Ride Left	Trial 2:	Ride Right
Date:	Sunday, November 5, 2017 at 2:46 PM	Date:	Sunday, November 5, 2017 at 2:46 PM
Attending:	Dr. Deborah Sieber	Attending:	Dr. Deborah Sieber
Surface:	Hard (generic)	Surface:	Hard (generic)
Blocks:		Blocks:	

Quantification of Asymmetry

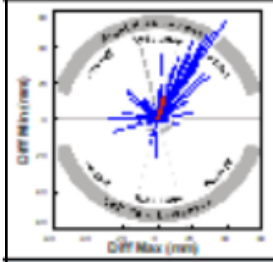
Forelimb Assessment



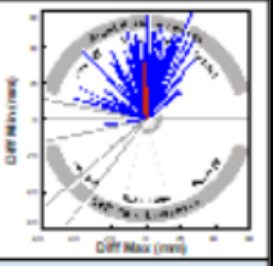
Sit Trot			
Stride Rate	1.4		
Strides Assessed	49		
Diff Max Head			
8.5 mm	Mean:	-6.6 mm	
10.7 mm	SD:	19.3 mm	
Diff Min Head			
17.7 mm	Mean:	27.9 mm	
10.2 mm	SD:	13.0 mm	



Sit Trot	
Stride Rate	1.5
Strides Assessed	80

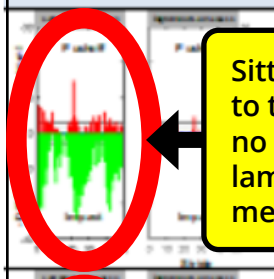


Post Trot			
Stride Rate	1.5		
Strides Assessed	56		
Diff Max Head			
3.9 mm	Mean:	-1.4 mm	
15.5 mm	SD:	16.2 mm	
Diff Min Head			
13.2 mm	Mean:	31.4 mm	
15.8 mm	SD:	13.1 mm	



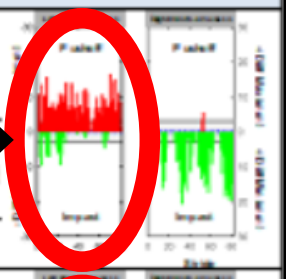
Post Trot	
Stride Rate	1.5
Strides Assessed	68

Hindlimb Assessment

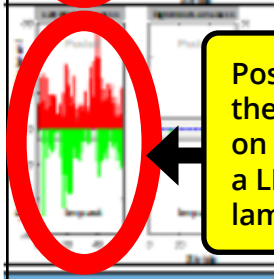


Sit Trot			
Diff Max Pelvis			
-2.3 mm	Mean:	-7.2 mm	
3.2 mm	SD:	4.3 mm	
Diff Min Pelvis			
-11.7 mm	Mean:	5.8 mm	
6.4 mm	SD:	8.4 mm	

Sitting the trot to the left, no push off lameness was measured.

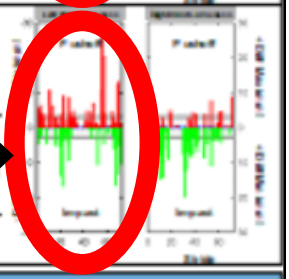


Sitting the trot to the right, a LH push off lameness was measured.



Post Trot			
Diff Max Pelvis			
-9.9 mm	Mean:	-2.4 mm	
5.1 mm	SD:	5.6 mm	
Diff Min Pelvis			
-6.1 mm	Mean:	1.0 mm	
7.0 mm	SD:	7.3 mm	

Posting trot to the left (posting on RF) induced a LH push off lameness.



Posting trot to the right (posting on LF) masked the LH lameness.

Rider AIDE

Sit Trot: There is evidence of RF impact lameness riding to the left.
There is evidence of RF pushoff lameness riding to the right.
There is evidence of LH impact lameness riding to the left. There is evidence of LH pushoff lameness riding to the right. The impact pattern riding in both directions is seen sometimes in normal horses riding on hard surfaces.

PostTrot: There is ev
There is ev
There is no
riding on ha

Ridden Evaluation (with Rider Module) - The rider sensor tracks rider activity (sit versus post trot) and provides separate analyses in one report (riding to left compared to riding to right, similar to the lunge evaluation). Posting can suppress upward movement of the pelvis creating a false push off lameness in the contralateral hind limb to which the rider is posting, seen here to the left. It can also mask a push off lameness in the opposite hind limb, seen here to the right.