



Muscle/Ligament Assessment

Date:19th July 2019.....

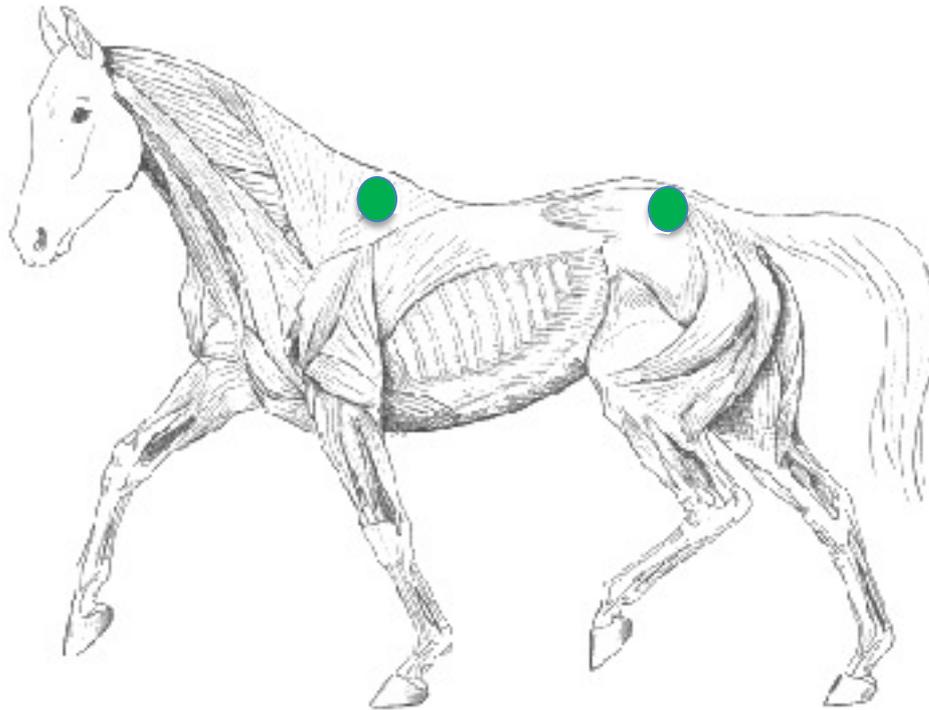
Muscle:

Owner:Ref: XYZ.....

Ligament:

Horse:Case #2.....

Discipline: ?? Not Stated (Barrel Horse?)



Data Files: The AMG measurements were made for the muscles trapezius and gluteus medius. These muscles were measured at a walk and trot in a straight line on a hard surface.

Findings: There are signs of weakness in the m. trapezius as the recorded signal is very small even at the trot. Furthermore, the data reveal weakness in m. gluteus medius as identified by a low ST value. The very low T-score at the walk for m. gluteus medius is commensurate with a painful gait. Moreover, no clear gait pattern for m. gluteus medius is consistent with a painful muscle.

Comments: These are interesting findings, indicating symptoms that include both muscle pain and weakness commensurate with tying up / rhabdomyolysis.

In consultation with DVM Xyz - Texas, USA.



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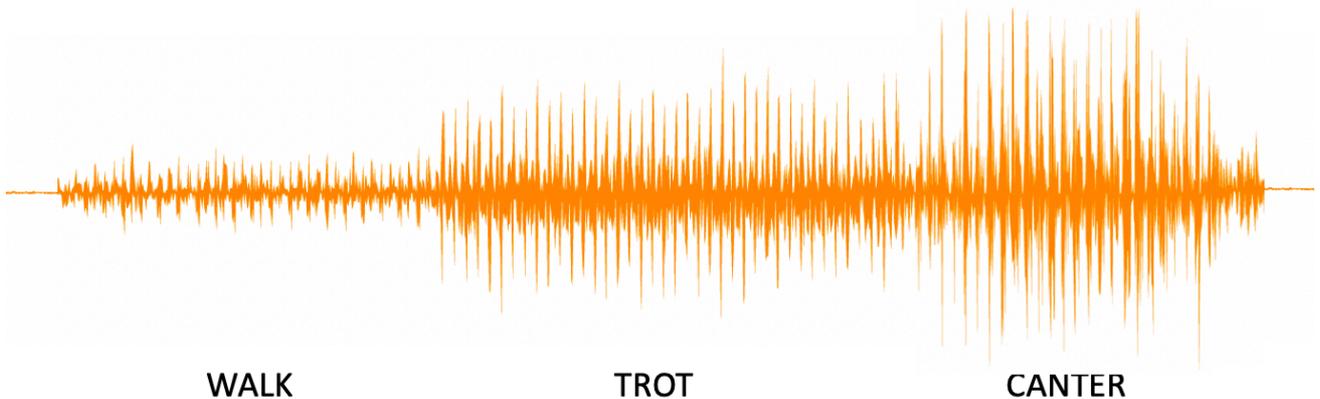
Muscle data for Case #2 – with comments

	Walk		ST	Balance	Comment
	Left-side	Right-side			
Trapezius	E=8.1 S=9.2 T=8.6	E=6.4 S=9.3 T=4.9	8.9/6.7	5.3	Very weak muscle signal (barely detectable at 6dB)
Gluteus M	E=0.5 S=6.0 T=2.7	E=2.3 S=7.6 T=2.2	4.3/4.9	-2.9	Painful gait – low T-score Low E-score

	Trot		ST	Balance	Comment
	Left-side	Right-side			
Trapezius	E=7.0 S=8.8 T=9.5	E=3.7 S=7.7 T=9.2	9.1/8.4	4.7	Very weak muscle signal (barely detectable at 6dB)
Gluteus M	E=0.5 S=1.0 T=9.0	E=1.6 S=1.0 T=8.5	5.0/4.7	-0.6	Low S-score – high level of spatial summation

Typical Values: walking – E-score = 5.6; S-score = 8.9; T-score = 6.8; ST-score = 7.8

Typical Values: trotting – E-score = 2.0; S-score = 7.1; T-score = 8.1; ST-score = 7.6
(for typical gait trace – see below)



Summary:

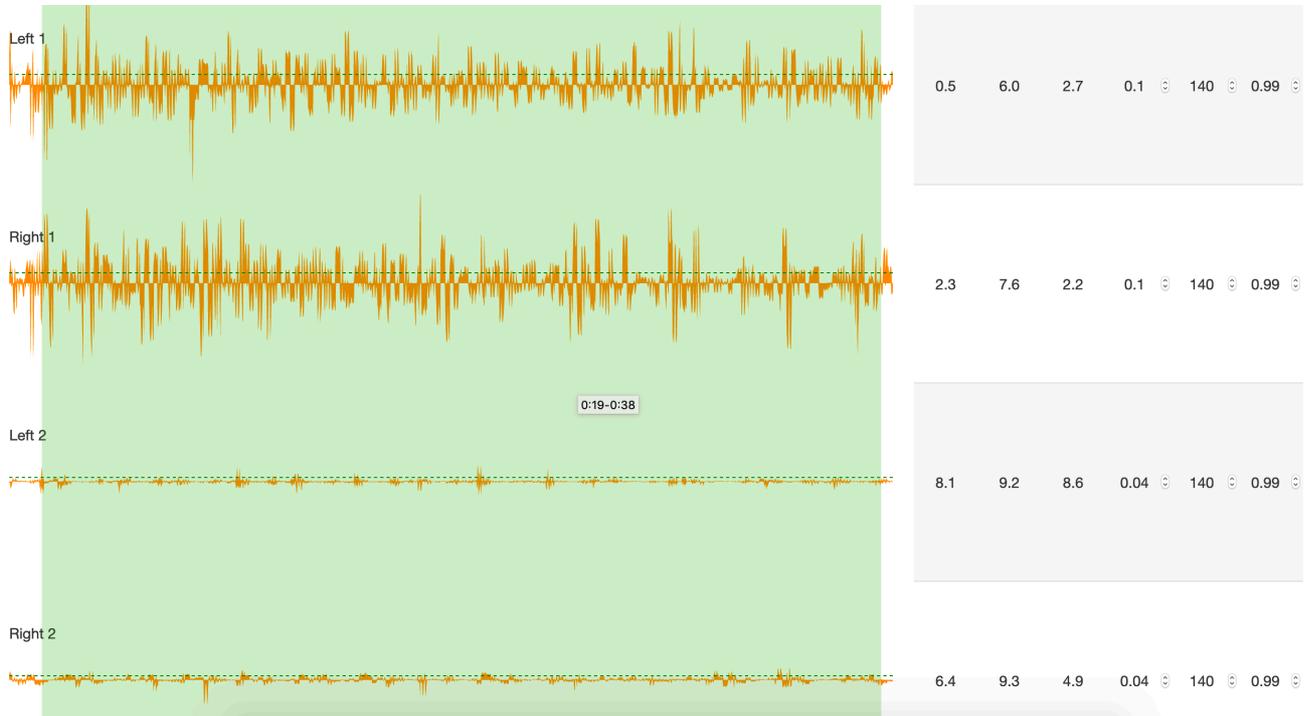
- Imbalance in m. trapezius – BUT both L & R sides are extremely weak so this difference will have very little physiological significance
- Very weak m. gluteus medius – low ST values compared to healthy controls (4.7 *cf* 7.6)
- Very low T-scores at the Walk for m. gluteus medius – commensurate with a painful gait (2.4 *cf* 6.8) – low T-score for m. trapezius (right-side)
- Very low S-score at the Trot for m. gluteus medius – muscle force being the result of increased spatial summation (low S-score) (1.9 *cf* 7.1)
- The traces show no clear gait pattern for m. gluteus medius – instead an almost constant activity in this muscle is observed

For iPad traces, see next page:

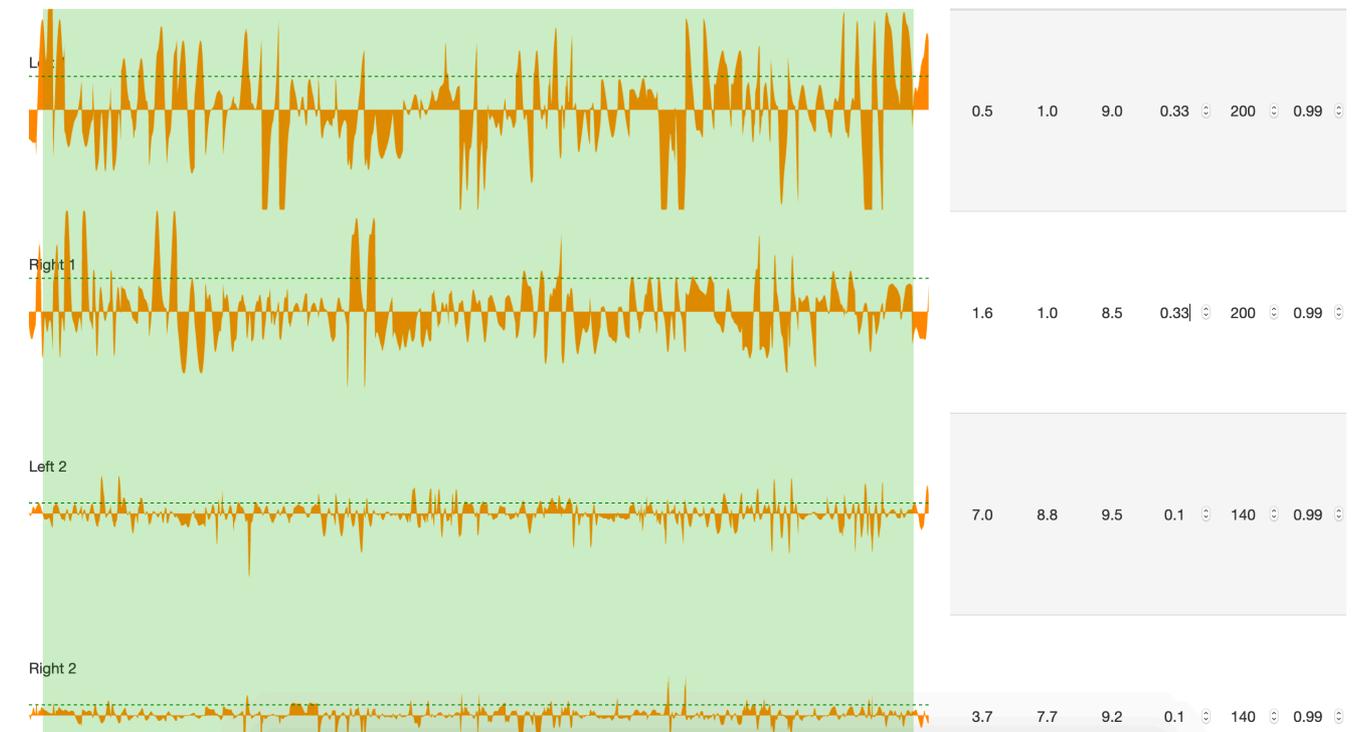


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WALK: m. gluteus medius (upper 2 traces) and m. trapezius (lower 2 traces)



TROT: m. gluteus medius (upper 2 traces) and m. trapezius (lower 2 traces)



NB: The AMG signal has been shown to correlate with muscle force when the S-score and T-score are combined to produce a ST-score - *Physiol Rep*, 6 (1), 2018, e13580, <https://doi.org/10.14814/phy2.13580>



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NB: The AMG signal comprises three physiological parameters, namely efficiency/coordination (E-score), spatial summation (S-score) and temporal summation (T-score).

The E corresponds to the periods of active/inactive function relative to the duration of the activity period of the muscle (how long the muscle is “on”), S in terms of muscle reflects the recruitment of motor units and equates to signal amplitude (how many motor units are active), and T is the motor unit firing rate or signal frequency (how fast the motor units are firing).