



Muscle/Ligament Assessment

Date: ...5th Dec 2018

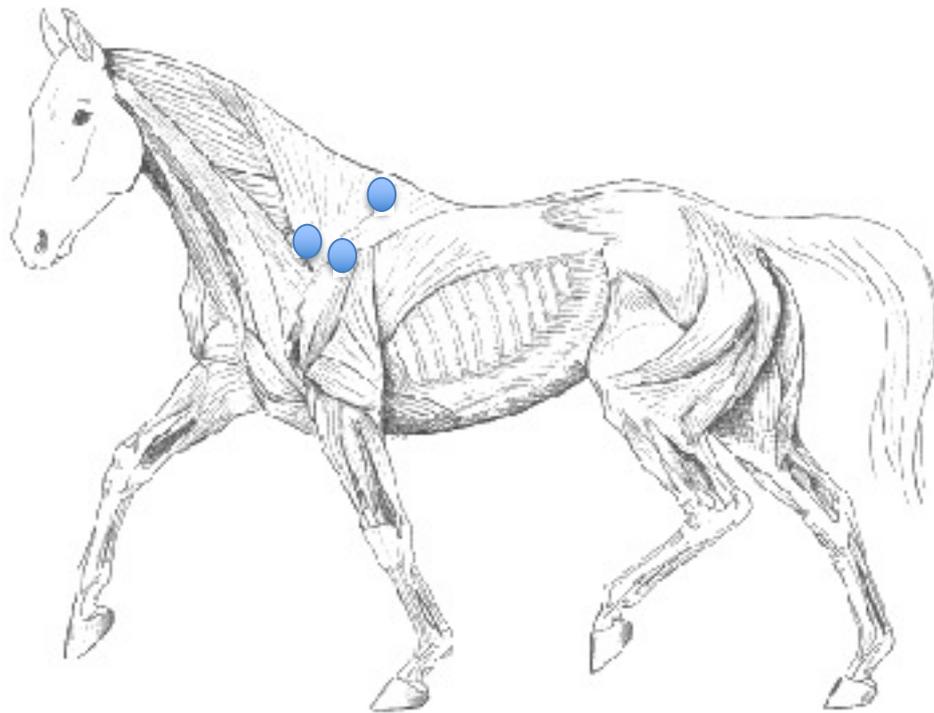
Muscle:

Owner: ...XYZ.....

Ligament:

Horse: Case #4.....

Discipline: Barrel Racer



Data Files: The AMG measurements were made for the muscles supraspinatus (extends and stabilizes the shoulder joint: suprascapular nerve C6-C7), deltoids (advances the fore limb and flexes the shoulder joint: axillary nerve C6,C7,C8) and trapezius (elevates the shoulder, draws the scapula cranio-dorsally and caudo-dorsally: accessory nerve CN XI). Measurements were during both walk and trot on a hard surface.

Findings: The muscle data show considerable weakness on the left- and right-hand sides for m.supraspinatus, deltoids and trapezius in that no recordings were possible at the default (6dB) setting. On the higher gain (15dB) setting it was possible to obtain recordings at the walk and trot for the muscles examined, but the results consistently show an overuse for the left- *versus* the right-hand sides for m.supraspinatus and m.trapezius – an asymmetrical imbalance. The general finding of a high T-score and a low S-score at the 15dB setting is indicative of a low-firing rate (temporal summation) with force production (albeit weak) being the result of increased fibre recruitment (spatial summation) – inefficient for the left-hand side (low E-score).

Comments: The results suggest neural damage to the 3 muscles measured, with subsequent atrophy. Neural damage that most likely cannot be restored. - *In consultation with a qualified Equine Veterinarian DVM – California, USA.*



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Muscle data for Case #4 – with comments

	Walk		Balance	Trot		Balance	Comment
	Left-side	Right-side		Left-side	Right-side		
Supraspinatus (High Gain 15dB)	E=5 S=4 T=5	E=8 S=7 T=7	-6	-	-	-	No recordable signal at 6dB – imbalanced muscle (LH working more than RH)
Deltoids (High Gain 15dB)	E=6 S=6 T=9	E=8 S=5 T=8	0	E=3 S=3 T=6	E=3 S=4 T=8	-2	No recordable signal at 6dB – balanced muscle
Trapezius (High Gain 15dB)	E=2 S=7 T=7	E=7 S=7 T=8	-7	E=1 S=6 T=8	E=6 S=7 T=8	-4	No recordable signal at 6dB – imbalanced muscle (LH working more than RH)

- Imbalance in m. supraspinatus and m.trapezius – worst at the walk *cf* trot
- NO recordable signals on the low gain (6dB) setting – only with 15dB
- General trend towards a very high T-score and low S-score

Supraspinatus (Walk)



Deltoids (Walk)



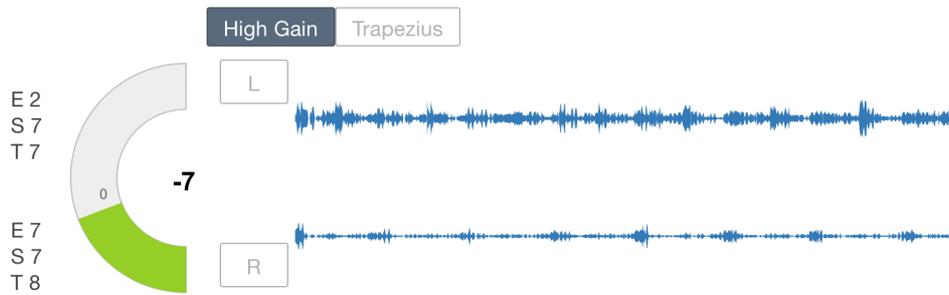


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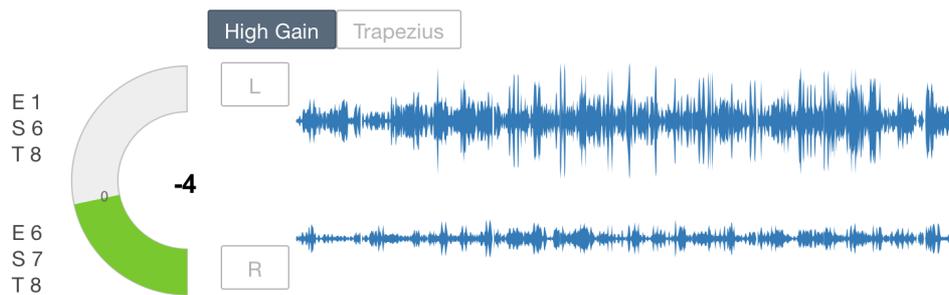
Deltoids (Trot)



Trapezius (Walk)



Trapezius (Trot)





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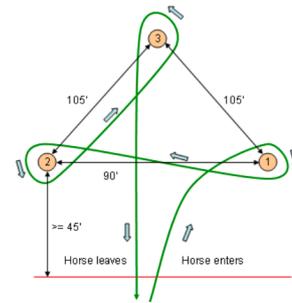
VET – Case: Equine Biomechanics

Synopsis:

The photo below of Case #4 (left-hand side – fore-limb) clearly shows the excessive muscle wastage around the scapula. Over 100 years ago this sort of injury was caused by the heavy harnesses that horses had to wear while pulling carts/buggies. These harnesses would pinch or bruise the suprascapular nerve against the shoulder blade, causing prolonged and continuous muscle damage.



Today, these type of injuries are mostly sports related, and often occur with Barrel Horses – a rodeo event in which a horse and rider attempt to complete a cloverleaf pattern around preset barrels in the fastest time.



Horses suffering from the condition that Case #4 has have atrophy of the supraspinatus and infraspinatus muscles that cover the scapula. This results in the scapular spine becoming prominent, and in severe cases, the muscles virtually disappear.

The atrophy is unusual in that it is often profound and very localized, which is indicative of an injury to a single motor nerve.

Most cases like Case #4 involve trauma to the cranial shoulder at the point where the nerve is exposed to potential compression as it courses over the cranial aspect of the scapula. The severity of damage determines the degree of atrophy and the chances of recovery.

If nerve function is severely compromised, the shoulder joint becomes unstable – remember it is a synarthrosis with no true collateral ligaments, relying on the surrounding muscles to support it. The result of wastage of the surrounding muscles can therefore be that the joint “pops out” sideways as the horse bears weight. This subluxation does not appear overtly painful to the horse, but if the joint cannot be stabilized, it may have significant implications for the long-term health of the joint and the horse’s athletic career.

Some other symptoms of this condition are:

- Hollowing around the spine of the Scapula
- Prominence of the Scapular spine
- Looseness of the shoulder joint (commonly diagnosed as “dislocated” shoulder)