Scapular Fractures and Stress Fractures in Racehorses

General Information about Scapular Fractures and Stress Fractures

- Scapular fractures typically occur due to bone weakening associated with a pre-existing stress fracture. Stress fractures most commonly occur at the distal aspect of the spine of the scapula (the junction of the spine and neck of the scapula).
- It is common for both front limbs of horses to be affected with a scapular stress fracture. Consequently, affected horses may demonstrate an unwillingness to perform, but may not have a clear left front leg or right front leg lameness.
- Initially, affected horses may be markedly lame, but the lameness appears to resolve very quickly even though the stress fracture has not had time to heal.
- Scapular stress fractures commonly (but not always) occur in horses when they start training or are coming back into training from a layup. Scapular stress fracture should be considered if a horse shows poor action or transitory lameness especially during return to training from a layup. Scapular fractures can occur prior to the horse's first breeze after a layup.

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Photo courtesy of Ken Taylor

- Although unproven, it is likely that pain associated with a scapular stress fracture may be detected by palpation during physical examination because of the superficial location of the scapular spine in the shoulder region.
- Although unproven, it is likely that bone changes in later stages of stress fracture development may be detectable using ultrasound imaging.
- Bone changes associated with a stress fracture are unlikely to be visible on radiographs because of the superimposition of large muscle masses on scapular radiographs.
- Scapular stress fractures can be reliably detected using a bone scan (scintigraphy).
- Horses with scapular stress fractures can be rehabilitated successfully so the stress fractures can heal without residual effects. Conversely, complete scapular fractures are fatal in an adult racehorse with very few exceptions.

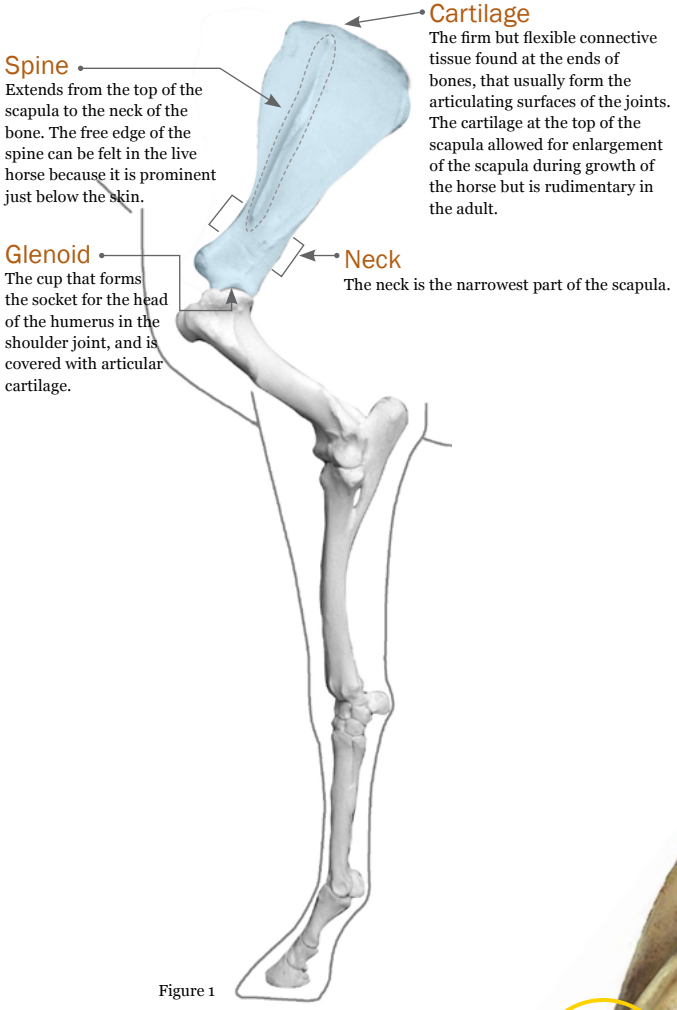


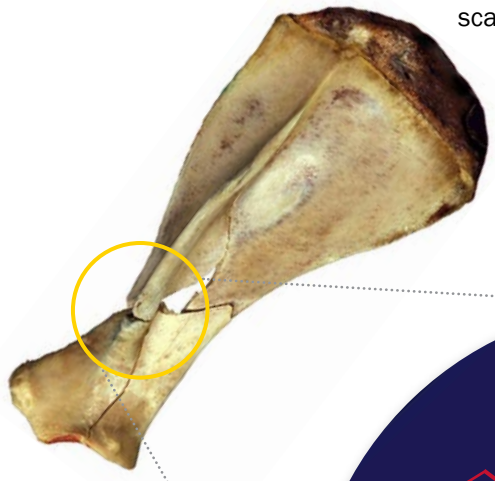
Figure 1

What to Look for in Scapular Fractures and Stress Fractures

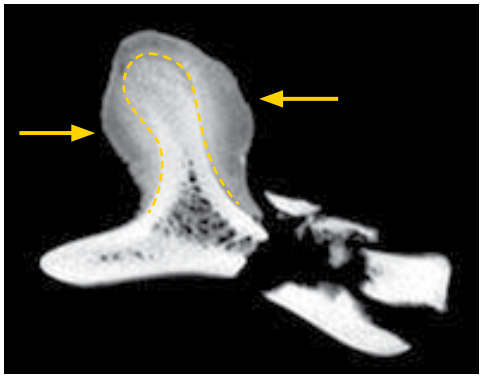
The scapula is a large flat bone that lies next to the chest and is commonly known as the shoulder blade. Scapular fractures occur toward the distal end of the shoulder blade, beside the chest. The fracture divides the bone into two major parts by an transverse fracture across the neck of the scapula at the distal end of the spine.

Horses are predisposed to a complete scapular fracture by the presence of a pre-existing stress fracture. The fluffy, whiter bone tissue (*Figure 3 yellow arrows*) on the surface of the bone near the fracture is evidence of a pre-existing stress fracture. The stress fracture creates a weak spot in the bone that makes the bone susceptible to complete fracture, usually during normal exercise.

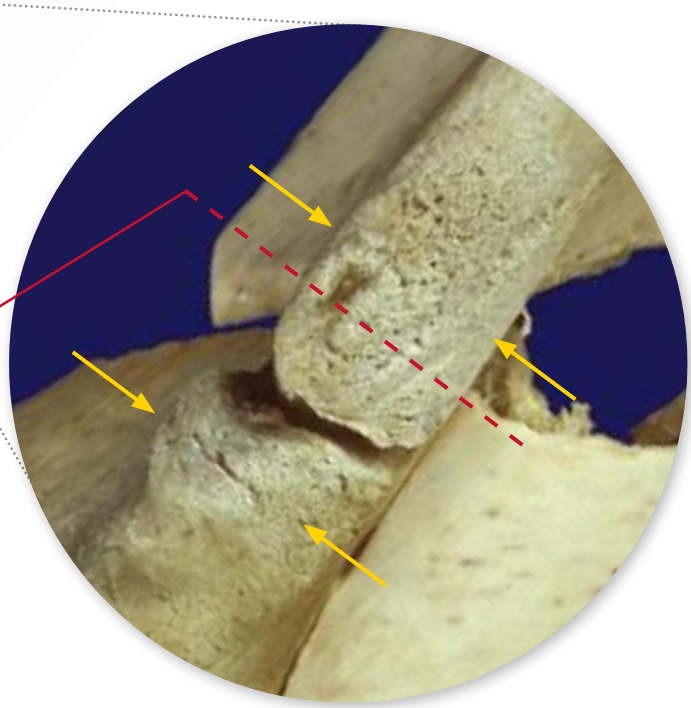
The computed tomography image (*transverse section at the level of the dashed red line on the image, Figure 3*) illustrates the periosteal callus (*yellow arrows, Figure 4*) surrounding the original contour of the damaged spine of the scapula (yellow dotted line, Figure 4).



Scapula
Figure 2



Computed Tomography
Figure 4



Scapula Close-up
Figure 3

Figure 5

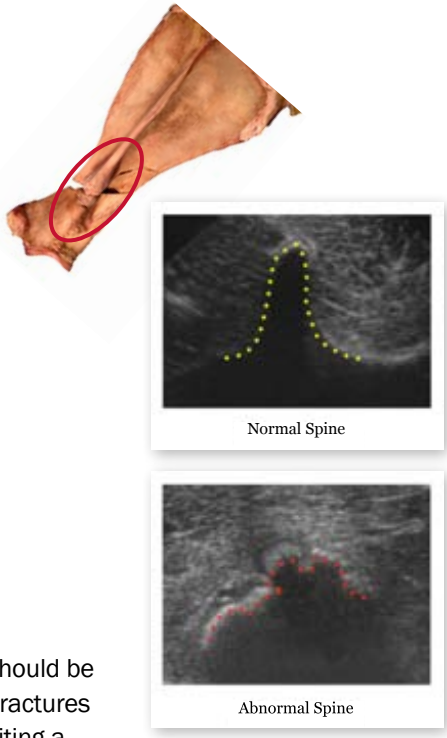


Figure 6

Figure 7

Courtesy of Dr. Mary Beth Whitcomb

Although unproven at this time, it should be possible to detect scapular stress fractures during physical examination by eliciting a painful response to palpation (Figure 5) or using ultrasonography (Figure 7). **Note** the different size and contour of the normal spine (Figure 6, *yellow dotted line*) compared to the spine with woven bone callus (Figure 6, *red dotted line*).

Figure 8

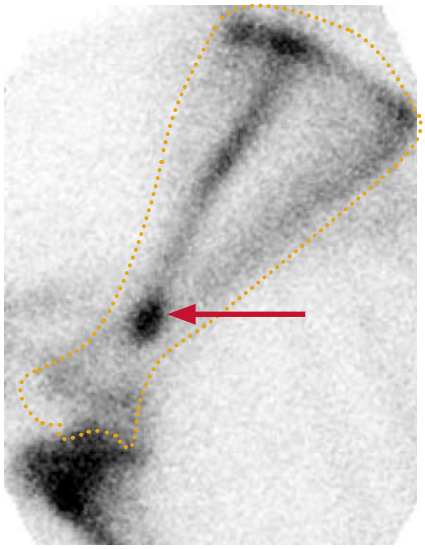


Figure 9

Scapular stress fractures can be detected (*Figure 9, red arrow*) in early and late stages of injury using scintigraphy (*Figure 8, bone scan*).

Courtesy of Dr. Mary Beth Whitcomb

Typical high-speed exercise history of horses that had a scapular fracture (*red symbols*) compared to other horses that did not have a scapular fracture (*gray, blue, or purple symbols*) and that competed in the same race or trained on the same day when the scapular fracture occurred.

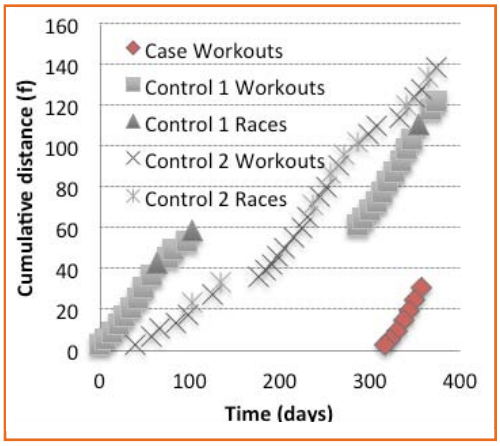


Figure 10

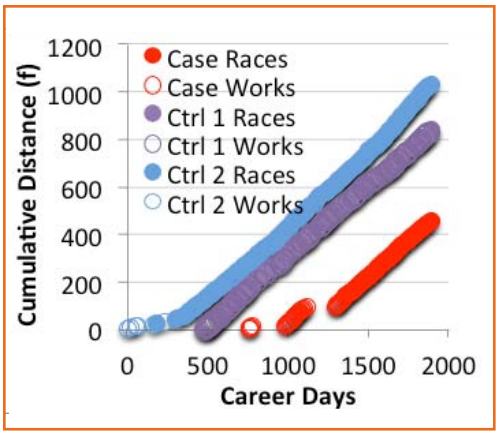


Figure 11

The most common scenario for a horse to fracture a scapula is when a horse first comes into training. The horse is often lagging behind their cohort.

The horse that had a scapular fracture (*red diamonds, Figure 10*) worked, but never raced; and is well behind his or her cohorts, other racehorses of similar age and sex (evidenced by the fewer furlongs trained at the same time of the year as horses that did not have a scapular fracture).

Occasionally a horse that has a long race career will fracture a scapula. The horse that had a scapular fracture (*red symbols, Figure 11*) also is racing and training behind his or her racehorse cohort.

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Acknowledgements

This program could not be possible without the cooperation of the racetracks, California Horse Racing Board and the California Animal Health and Food Safety Laboratory System.

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