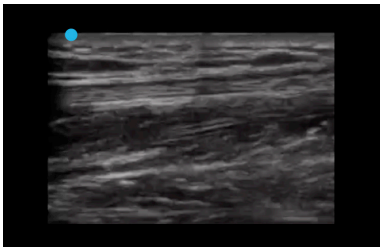
Musculoskeletal imaging

IDENTIFYING SOFT TISSUE STRUCTURES

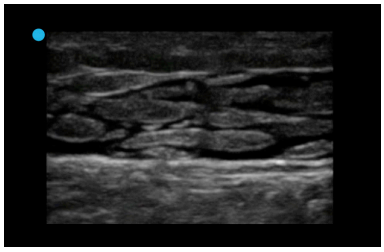
The ability to recognize different types of soft tissues is the foundation of musculoskeletal ultrasound.

Skin

Skin and subcuticular tissue is typically thin. On ultrasound, it is most commonly noted if abnormal.



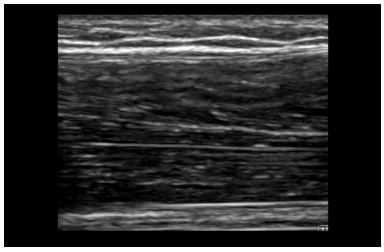
Normal



Edema

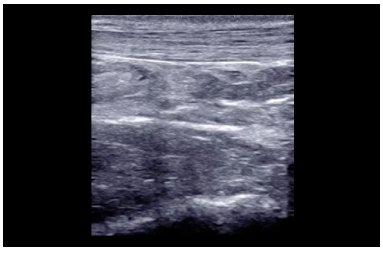
Muscle and fascia

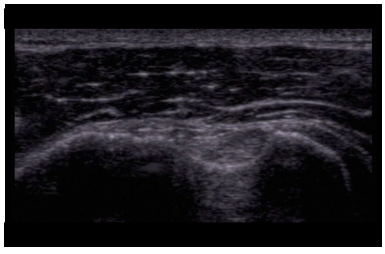
Striated muscle appears hypoechoic with hyperechoic striations. These striations appear linear in long-axis and dotted in short-axis. Fascia is hyperechoic and covers striated muscle.



Tendon

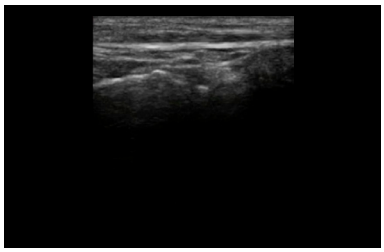
Tendons are hyperechoic and have a fibrillar or band-like structure. They have the property of anisotropy (as observed below, right) and appear most prominent when viewed at a perpendicular angle.





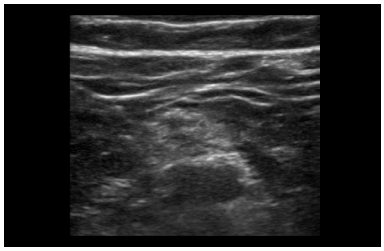
Ligament

Ligaments have a hyperechoic, band-like fibrillar pattern, and will insert on bone at both ends. They can be difficult to appreciate if uninjured; it helps to understand the underlying anatomy and expected location of the tendon, as well as to move the transducer.



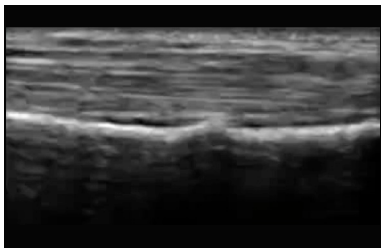
Nerve

Nerves are best seen in short axis. They have a stippled, honeycomb appearance. Nerves appear hyperechoic below the clavicle and relatively hypoechoic above it. Like tendons, they have the property of anisotropy.



Bone

Bones are hyperechoic and will create shadowing. If uninjured, they will have a smooth, regular contour.



Blood vessel

Vascular structures are anechoic in their normal state. They can display flow on color Doppler. Veins are compressible with low pressure; arteries are typically noncompressible.

Lymph node

Lymph nodes are hypoechoic with a hyperechoic hilum or stalk. They are most commonly appreciated if enlarged. They will display flow with Doppler.