

Information Sheet for Musculoskeletal Ultrasound

Musculoskeletal diagnostic ultrasound is an injury assessment modality that uses sound waves to create images of painful or injured areas in the body. This technique provides high resolution images. Musculoskeletal ultrasound is known to be effective in improving care of patients with a variety of musculoskeletal injuries. Although MRI dominated as an imaging procedure for many years in North America, musculoskeletal ultrasound is now emerging as an affordable alternative to MRI. Historically this technique was developed in the German-speaking countries, mainly Germany and Switzerland, and is now being utilized throughout Europe.

Sport injuries. One of the domains of this modality is identifying sport injuries and thus providing accuracy in diagnosis and preventing injury progression. This modality is a vital tool in any clinical practice treating sport injuries. This modality is utilized in elite performance injury evaluations at all professional levels including Olympic training centers, the National Football League and the National Basketball Association (to name a few).

Shoulder injuries associated with whiplash. Shoulder injury has been reported to occur in a proportion of patients following whiplash injuries to the neck.

General indications of musculoskeletal ultrasound: MSK ultrasound can be an effective tool for many different types of injuries such as:

Shoulder conditions: This modality is useful in evaluating for rotator cuff injuries, calcific tendonitis, subacromial bursitis, joint effusion and impingement syndrome. If there is suspicion of instability with potential SLAP and labral lesions referral to an MRI is indicated.

Elbow and wrist conditions: Joint effusions as a sign of acute or chronic injury, distal bicipital tendonitis, cartilage alterations, dynamic testing of ligaments and flexor and extensor origins and insertions can be visualized. Peripheral nerve entrapment syndromes are a domain of nerve conduction studies.

Hip and thigh conditions: Neonatal hip screening rules in or out congenital hip dysplasia, which cannot be detected clinically. Joint effusions, bursal and tendon abnormalities whether acute traumatic or chronic are a good indication for musculoskeletal ultrasound.

Knee conditions: Joint effusions, synovial hypertrophy, bursal abnormalities, tendon pathologies, MCL and LCL lesions, cartilage changes and popliteal cysts are very well depicted with musculoskeletal ultrasound. It is not possible to visualize the ACL and PCL and there is limited resolution of the menisci.

Foot and ankle: Joint effusions, synovial hypertrophy, bursal abnormalities, tendon pathologies (flexor, extensor and Achilles tendon), ligamentous injury of the anterior talofibular and deltoid ligament and Morton's neuroma are visible.

Other advantages of this modality include:

It is safe: Ultrasound imaging is safe and noninvasive without risk factors. It can also be used in patients when MRI is contraindicated. There is no radiation involved and can therefore be used repeatedly if clinically necessary.

It is accurate: There are certain anatomic regions like the shoulder where this technique has proven to be equal or superior to MRI. As opposed to MRI, MSK ultrasound does not only provide static visualization but in addition it adds a dynamic component. Ligaments, tendons and muscles can be tested under the application of stress. This allows testing the integrity of soft tissue structures and helps to evaluate pain with motion.

It is affordable: The cost of MSK ultrasound is lower than the insurance deductible for an MRI.

It is efficient: The ultrasound is easily portable and allows the examiner to immediately screen for injuries at any location. This explains the high utilization of this technique in professional athletics.

Our physician sonographer is Thomas Buchhammer, M.D., D.C., PhD, a German board certified orthopedic surgeon with outstanding knowledge of conditions seen in chiropractic practices. Since the early 1990s while working as an orthopedic surgeon he extensively used musculoskeletal ultrasound as a diagnostic tool. In addition to his medical experience, he also has a degree in chiropractic from the University of Western States. His abilities as an orthopedic surgeon and chiropractic physician in combination with his knowledge and skills in diagnostic musculoskeletal ultrasound brings a unique perspective that will benefit patients.

Please contact Dr. Thomas Buchhammer, Diagnostic Ultrasound Provider, at tbuchhammer@uws.edu if you would like more information about our musculoskeletal ultrasound services.