ARDMS®
American Registry for Diagnostic Medical Sonography

Musculoskeletal Sonography Examination Content Outline

(Outline Summary)

#	Domain	Subdomain	Percentage
1	**General Anatomy and Physiology**	Abdominal wall | Ankle and foot | Chest wall Elbow | Hand and wrist | Hip, groin, and pelvis Knee | Shoulder | Developmental changes	**33%**
2	**General Pathology**	Abnormal physiology	**42%**
3	**Protocols and Integration of Data**	Clinical standards and guidelines Incorporate outside data	**21%**
4	**Interventional Procedures**	Sonographer role in procedure	**4%**

(Detailed Outline)

1.	Anatomy 33%
1.A.	***Abdominal wall***
1.A.1.	Perform general ultrasound of the muscles and fasciae of the abdominal wall
1.B.	***Ankle and foot***
1.B.1.	Perform general ultrasound of the bones, bursae, fat pads, and joints of the ankle and foot
1.B.2.	Perform general ultrasound of the fasciae, ligaments, muscles, retinaculum, and tendons of the ankle and foot
1.B.3.	Perform general ultrasound of the neurovascular system of the ankle and foot
1.C.	***Chest wall***
1.C.1.	Perform general ultrasound of the bones, muscles, and fasciae of the chest wall
1.D.	***Elbow***
1.D.1.	Perform general ultrasound of the bones, bursae, fat pads, joints, and ligaments of the elbow
1.D.2.	Perform general ultrasound of the fasciae, muscles, and tendons of the elbow
1.D.3.	Perform general ultrasound of the neurovascular system of the elbow
1.E.	***Hand and Wrist***
1.E.1.	Perform general ultrasound of the bones, cartilage, and joints of the hand and wrist
1.E.2.	Perform general ultrasound of the fasciae, muscles, tendons, retinaculum, pulleys, sagittal bands, and ligaments of the hand and wrist

1.E.3.	Perform general ultrasound of the neurovascular system of the hand and wrist
1.F.	***Hip, Groin, and Pelvis***
1.F.1.	Perform general ultrasound of the bones, bursae, cartilage, and joints of the hip, groin, and pelvis
1.F.2.	Perform general ultrasound of the muscles and tendons of the hip, groin, and pelvis
1.F.3.	Perform general ultrasound of the lymphatic and neurovascular system of the hip, groin, and pelvis
1.G.	***Knee***
1.G.1.	Perform general ultrasound of the bones, bursae, fat pads, cartilage, and joints of the knee
1.G.2.	Perform general ultrasound of the muscles, tendons, retinaculum, and ligaments of the knee
1.G.3.	Perform general ultrasound of the neurovascular system of the knee
1.H.	***Shoulder***
1.H.1.	Perform general ultrasound of the bones, bursae, cartilage, joints, and ligaments of the shoulder
1.H.2.	Perform general ultrasound of the muscles and tendons of the shoulder
1.H.3.	Perform general ultrasound of the neurovascular system of the shoulder
1.I.	***Developmental changes***
1.I.1.	Differentiate pediatric from adult anatomy
2.	**General Pathology 42%**
2.A.	***Abnormal physiology***
2.A.1.	Evaluate bone pathology and erosion
2.A.2.	Evaluate cartilage pathology
2.A.3.	Evaluate synovitis
2.A.4.	Evaluate synovial proliferation
2.A.5.	Evaluate joint effusions
2.A.6.	Evaluate crystal deposits
2.A.7.	Evaluate joint laxity/altered function
2.A.8.	Evaluate ligament pathology and tears
2.A.9.	Evaluate tendon pathology, calcifications, and tears
2.A.10.	Evaluate impingement, subluxations/dislocation and altered function
2.A.11.	Evaluate muscle pathology and tears
2.A.12.	Evaluate bursa pathology
2.A.13.	Evaluate nerve pathology and entrapment
2.A.14.	Evaluate soft tissue/subcutaneous pathology
2.A.15.	Evaluate for gas within the soft tissue
2.A.16.	Evaluate infections
2.A.17.	Evaluate for foreign body
2.A.18.	Evaluate masses

2.A.19.	Evaluate fluid collections
2.A.20.	Evaluate cystic structures
2.A.21.	Evaluate hernias
2.A.22.	Evaluate retinaculum pathology
2.A.23.	Evaluate pully and sagittal band pathology
2.A.24.	Evaluate pediatric specific musculoskeletal pathology
2.A.25.	Evaluate sternoclavicular joint pathology
2.A.26.	Evaluate postsurgical anatomy and hardware (including prosthetic hip)
3.	**Protocols and Integration of Data 21%**
3.A.	***Clinical standards and guidelines***
3.A.1.	Position patient and ultrasound machine
3.A.2.	Assess the physical condition of the patient, focusing on the area to be examined
3.A.3.	Follow ultrasound imaging protocols for musculoskeletal-related studies
3.A.4.	Perform anatomic assessment during dynamic scanning
3.A.5.	Manipulate probe positioning for optimal image acquisition, i.e., anisotropy
3.A.6.	Follow course of disease with serial ultrasound exams
3.A.7.	Perform measurements
3.A.8.	Communicate ultrasound findings
3.A.9.	Recognize ultrasound findings that require immediate action
3.B.	***Incorporate outside data***
3.B.1.	Verify appropriateness of the order and obtain pertinent clinical history from the patient and/or medical records
3.B.2.	Correlate ultrasound findings with clinical presentation and previous imaging
4.	**Procedures 4%**
4.A.	***Sonographer role in procedure***
4.A.1.	Maintain aseptic techniques during interventional procedures
4.A.2.	Assist/support ultrasound guidance during interventional procedures
4.A.3.	Follow postprocedural protocols, i.e., pain assessment, complications, and specimen management

Knowledge and abilities related to the Musculoskeletal Sonography examination include, but are not limited to:

Knowledge of musculoskeletal anatomy and physiology including normal sonographic appearance, anatomic landmarks, and adjacent structures.

Knowledge of normal variants in pediatric and adult patients including sesamoids and accessory muscles.

Knowledge of adult versus pediatric sonographic appearance of musculoskeletal structures.

Knowledge of musculoskeletal pathology and abnormal physiology including sonographic appearance and clinical presentation.

Knowledge of bone pathology including fractures, erosions, degenerative changes, and neoplasms.

Knowledge of laxity, sprains, tears, calcifications, and tendinopathy.

Ability to differentiate severity of partial or full-thickness tendon tears.

Knowledge of muscle strains and tears, muscle atrophy with denervation, muscle herniation, muscle tissue neoplasms, and post traumatic changes.

Knowledge of bursal distention, thickening, calcification, and impingement.

Knowledge of nerve entrapment, neoplasms, and subluxation/dislocation.

Knowledge of soft tissue gas, edema, infection, and neoplasms.

Knowledge of foreign bodies including sonographic appearance, clinical presentation, and associated complications.

Knowledge of retinaculum thickening and tears.

Knowledge of post-surgical anatomy, hardware, and post-surgical complications.

Knowledge of pediatric specific musculoskeletal pathology including clinical presentation and evaluation parameters.

Knowledge of clinical indications.

Ability to correlate current clinical presentation with ultrasound findings, previous imaging, and/or prior intervention.

Ability to maintain proper ergonomics.

Knowledge of appropriate patient positions.

Ability to adapt imaging protocol based on clinical indication, sonographic findings, and area of concern.

Knowledge of musculoskeletal examination protocols and standards.

Knowledge of appropriate dynamic maneuvers to evaluate tears, impingement, and subluxation/dislocation (e.g. compression, flexion, Valgus stress).

Ability to recognize abnormality/pathology using dynamic maneuvers.

Knowledge of appropriately applying Valsalva maneuvers.

Knowledge of imaging artifacts and the ability to use or eliminate them to achieve diagnostic images.

Knowledge of orthogonal planes.

Ability to adjust machine settings for focal zone, frequency, depth, extended field of view, power/Doppler imaging, and appropriate transducer selection.

Knowledge of progression of pathologic processes including inflammatory and autoimmune conditions.

Knowledge of measurement criteria and parameters including normal and abnormal values.

Ability to communicate findings to interpreting physician.

Knowledge of musculoskeletal or incidental findings requiring immediate attention.

Ability to recognize changes related to patient well-being requiring immediate action.

Knowledge of universal precautions and maintaining aseptic techniques

Knowledge of musculoskeletal procedures, indications, and contraindications (e.g. aspirations, biopsies, injections, in-plane, and out-of-plane techniques).

Knowledge of musculoskeletal postprocedural protocols and complications.