

What is out there to learn musculoskeletal ultrasound

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(research done mostly mid 2022)

Document Outline

- 1) Review of current certifications available to chiropractors
- 2) Review of some educational programs offered.
- 3) Allocation of learning objectives/competencies to individual courses/learning activities.
- 4) Appendix I: Some learning aids (books, resources, etc..)
- 5) Appendix II: Ultrasound machine recommendations.

Current fellowships or certifications for musculoskeletal ultrasound (physician level).

[Registered in musculoskeletal ultrasound \(RMSK\) by the APCA](#)

- Started in 2012. The standard. A sister organization is responsible for the standard certifications for sonography.
- 150 patient exams required (no more than 8 may be therapeutic). 30 hours education recommended but not required. 1 written exam offered twice a year via exam proctoring center.
- Available to MD, DO, DPM, MBBS, DC, NP, PA, DPT, PT
- \$600 USD cost.
- Pass rate of about 60-70%

[POCUS musculoskeletal ultrasound specialty certification by the POCUS certification academy](#)

- Requires a "POCUS fundamentals" certification. \$150 which includes a 1-2 hour online module and an exam. **(I did this)**
- They do have some free case studies and learning resources/infographics
- Individual regions can be certified: upper extremity, soft tissue, or lower extremity. Each costs \$150, requires an exam, 20 scans, 2 peer evaluations of competency.
- \$625 for specialty certification. Requires an exam, 60 scans, 2 peer evaluations, and Six 5s-60s video submissions (3 showing normal anatomy and 3 showing pathology)

[Certificate, Diplomate, or Fellowship in musculoskeletal ultrasound by the American Academy of MSK Ultrasound \(AAMU\)](#)

- Certificate \$3999, Diplomate \$8,388, Fellowship \$28,050 **(Compare with my program!)**
- All of them include online learning modules and 2 weekend live scanning events.
- Diplomate adds in 2 more days of live scanning and a report writing module
- Fellowship adds live-onsite mentorship and 150 individualized case reviews.
- Advertised as the only musculoskeletal ultrasound fellowship program

[AIUM practice accreditation](#)

- voluntary accreditation of a clinic
- sets standards for equipment and for practitioners.
- The [standards for chiropractors](#) are as follows:
 - Diplomate status granted by the American Chiropractic Board of Radiology or the American Chiropractic Board of Sports Physicians and the supervision and/or performance, interpretation, and reporting of 150 diagnostic MSK ultrasound examinations plus 1 of the following:
 - 30 hours of AMA PRA Category 1 Credits™ or AOA Category 1-A Credits specific to MSK ultrasound within the previous 36 months, including at least 1 MSK ultrasound course that provided hands-on training; or
 - Certification in MSK ultrasound (active status) by the APCA-RMSK and at least 1 MSK ultrasound course that provided hands-on training in the previous 36 months.

Some online educational programs

“[musculoskeletal sonography for Advanced Practice](#)” by the Michener Institute

(I did this. It is Garbage! Do not do!!)

- Sonographer level program
- Amateurish: links to free youtube videos, missing examples of scanning important regions, (No example of posterior knee scan?!), errors in quizzes, etc...
- Region based, one module for each region: shoulder, wrist, hip, etc... - normal then common pathologies. Common format, easy to organize the curriculum and to teach.
- Officially 48 hours (4.8CEU) but less in practice, only temporary access to lectures.
- Approx \$1000 USD

AIUM online continuing education

- 50 online seminars, webinars, lectures, and articles
- Ranging in length from 1 to 3.5 CE hours (**I've watched a few, they are excellent**)
- From **\$0** to \$60/hour - discount for members
- They partnered with the American Physical Therapy Association to promote ultrasound use and the online lectures/seminars produced are **relevant for POCUS chiropractors and physical therapists.**
- You can watch just one lecture, specifically on how to use it to diagnose carpal tunnel (not a comprehensive lecture on all wrist sonography/pathology). After that one lecture the physician can start to use it for that purpose that day! They also have longer lectures, One on general msk ultrasound use (3.5 hours) and some on regions (1-2 hours).

MSKmasters

- educational materials produced by a chiropractor
- foundations course (18 hours), live scanning demo (6 hours), and RMSK review (20 hours).
- videos are 15-20 minutes long, easily digestible
- lifetime access, \$1,795 USD for the whole program (as of April 2022)
- This program is similar to what we should want in terms of size of videos, foundations covering basics to get the chiropractor knowledgeable enough to get out there and start scanning and then the RMSK review course delves into the deep detail of an expert. Example: the foundations course covers scanning the posterior wrist for tenosynovitis or effusion in such a way to spot if something is wrong. The RMSK review goes into the specific compartments of the posterior wrist.

Gulfcoast ultrasound institute

- Online goal based courses from about \$500 to \$1,200 USD, one year access.
- All of them involve John Jacobson MD, RMSK (author of arguably the most well known book on msk ultrasound)
- Region based introduction (upper extremity or lower extremity), physics and sonography principles and instrumentation registry review, rmsk review, POCUS MSK certification review, peripheral nerves, advanced ultrasound uses.

- rmsk review is the longest course at approx 24 hours. **(I did this and it was excellent)**

American Academy of Musculoskeletal Ultrasound ([AAMU](#))

- Certificate, diploma, and fellowship program
- Live weekend courses mostly
- Top level includes a site visit and a 150 report writing/interpreting module
- Prices for the three levels are \$3999, \$8388, and \$28,050 respectively.

American Academy of Manipulative therapy ([AAMT](#))

- Live workshops costing about \$1,300 a piece
- 60 hour diploma program, 4 courses in 8 days, cost of about \$5,000
- 114 hour fellowship program, 6 courses over 14 days, cost of about \$9,000

[123sono](#) / [sonoskills](#)

- 15 hours, 170 short lectures, introduction to msk ultrasound
- 20 h shoulder-only course, 12 hour foot and ankle course
- courses are roughly \$500 USD - one year access

[MSK ultrasound mastermind](#)

- taught by a RMSK/physiotherapist
- typical modules: intro, shoulder, elbow, wrist/hand, etc... Each module with anatomy, how to scan, then pathology.
- only program I've seen so far with a module on lumbar spine and SI joints.
- \$1,500

[Sonosim](#)

- simulated scanning software and usb scanning device (fake ultrasound transducer and pad)
- only way to get a feel for scanning pathology before finding it in patients. I'd argue that scanning a live person is still better than using the simulated pad for normal anatomy.
- I like the idea of scan-along exercises and would like to incorporate that into our program except with the use of an actual transducer, on themselves or on a helper.
- modules are \$400-\$800 USD and the entire package for msk is \$4500USD.
- Requires yearly membership to retain access to purchased modules.

Free [youtube videos](#)

- [SMUG ultrasound](#): 2 minutes quick scan protocols with normal anatomy - perfect for the POCUS practitioner either to learn or to get a refresher. Longer 8min to 20 min videos, often featuring Jon Jacobson.
- [MSK Australia](#) - 2-5 min scanning videos featuring normal anatomy - great for POCUS practitioners.

[Pocuspro](#)

- Resource to have experts over-read and comment on your images and cases at \$10/case. Resource of case studies to read and participate in discussions.

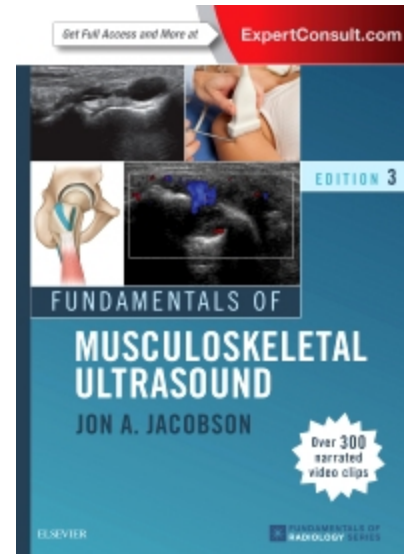
[NHS/College of radiographers - clinical imaging](#)

- \$120 for a 45 module course involving MRI, radiographs, and sonography (half a dozen modules). Each module is roughly 2-3 hours.
- They also have a pain management program for a very reasonable cost.

Appendix I: Educational Resources

[Fundamental of Musculoskeletal ultrasound \(3rd edition\) by Jon A. Jacobson M.D.](#)

- Written by the foremost expert in msk ultrasound
- This book is recommended in every educational program I've investigated.
- This book will act as a content guide although our program. It doesn't cover some emerging ultrasound uses such as: TMJ, scapular dyskinesia, multifidus atrophy, cx functional instability, guided dry needling, etc....



[European Society of Musculoskeletal Ultrasound scanning guides](#)

- Guides for [Ankle](#), [Knee](#), [Elbow](#), [Shoulder](#), [Hip](#), [Wrist](#)
- Shows normal anatomy with some standard positions and views.
- Good for practicing.
- I got into the trap of trying to get the pictures when I started scanning patients, the static picture is a starting point, you have to scan through the anatomy you are interested in. Ultrasound scanning is much more organic and dynamic, particularly in a pocus setting, than radiographs where the standard images are what you want.

We should produce our own reference chart of key values. A cheat sheet of key measurements such as plantar fascia should be <4mm, median nerve at carpal tunnel <9mm², etc...

Free youtube videos

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Consensus statement on [Sports ultrasound terminology](#)

[The EFSUMB Guidelines and Recommendations for Musculoskeletal Ultrasound](#) part I, [part II](#)

[POCUS certification Academy](#)

- Infographic and case studies

Appendix II: Ultrasound machine recommendations

ACR–AIUM–SPR–SSR–SRU PRACTICE PARAMETER FOR THE PERFORMANCE OF THE MUSCULOSKELETAL ULTRASOUND EXAMINATION

“Musculoskeletal ultrasound should be performed with **high-resolution linear array transducers** with a broad bandwidth. Transducer frequencies will vary depending on the structure being imaged and body habitus; lower frequencies (6-9 MHz) are typically required for deeper structures and higher frequencies for superficial structures. **The most common higher transducer frequencies used range between 12 and 18 MHz.** Newer transducers have a frequency range up to 24 MHz that help in evaluation of smaller, superficial structures like pulleys, tendons, and nerves. **Color and power Doppler** are valuable in assessing hyperemia and inflammation, vascularity of a soft tissue mass, differentiating cystic from solid lesions and in assisting with ultrasound-guided biopsy, injection, and aspiration procedures [39]. Doppler frequencies should be set to optimize flow detection. Tissue harmonic imaging, compound imaging, and extended field of view may all be useful in musculoskeletal ultrasound.”

Clarius L15 HD3

-5-15MHz,

-\$3,400 USD plus \$500/year membership (includes cloud image storage and extra msk presets and some extra features like elastography). \$5000USD to purchase without membership

-limited usefulness for deeper structures like the hip, but otherwise a great choice for a chiropractor or physiotherapist.

- Excellent imaging for less than a depth of 4cm. poor quality images deeper.

-power and colour doppler included.

-cellphone app is excellent and robust. The online cloud software is severely lacking: Report writing is buggy, adding annotations is buggy, you can't take measurements once it has been uploaded to the cloud, can't modify contrast/brightness, can't take images from cineloops/videos, etc...

-order the optional fan attachment. Not needed for a patient scan but needed for practicing as it gets very hot if used continuously for more than 5 minutes.

-While a cellphone will work, a large tablet is recommended, like the **samsung tabS6 lite**. Note that GPS capability is required for the clarius app to work so some tablets will not work.

