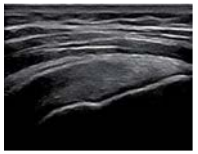

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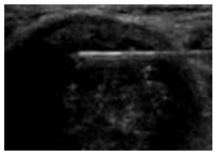

The role of diagnostic ultrasound in MSK medicine

Follow us on Twitter @SMUGcourses @CMyersPhysio

Facebook Group 'SMUGUltrasoundForum'

Chris Myers

Chartered Physiotherapist & Registered Osteopath
MSK Sonographer & Independent Prescriber

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www.complete-physio.co.uk
Private practice - London

Complete Physio

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2

Few points before we start!

- We are not talking about therapeutic ultrasound !
- You cannot see trigger points on ultrasound
- Generally speaking - not useful for the diagnosis of spinal pathology

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We must always reflect and question our own practice …

- What we think we are feeling is often not what we are actually feeling!
- As clinicians we make a lot of assumptions and (educated) guesses
- We all know the limitations of imaging, but we must be aware of our own limitations and the limitations of our clinical assessment to make a structural diagnosis

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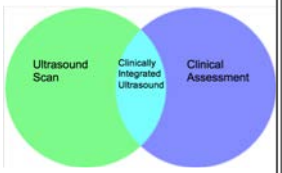
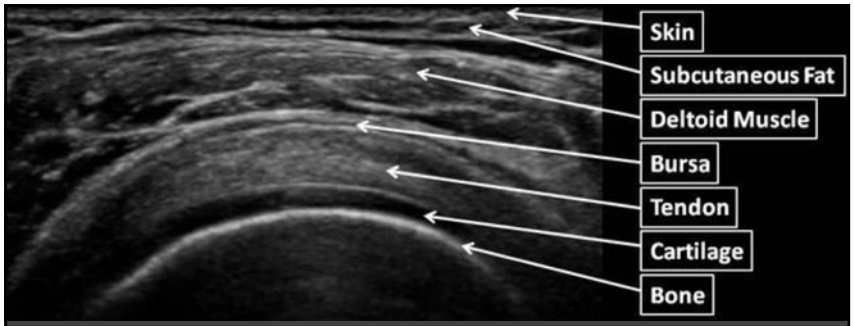
Natural extension of my clinical skills



How do I use ultrasound in my clinic?

5

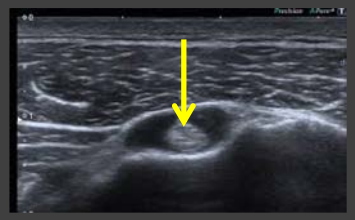


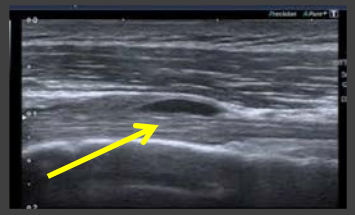
What are you actually looking at!

6

Scanning planes & normal anatomy

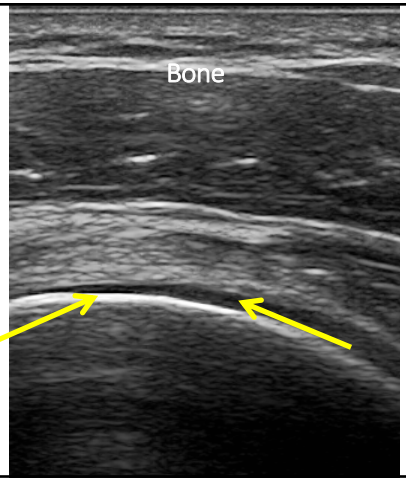
- Relates to the anatomical structure being scanned (different to MRI)
- Long section/longitudinal
- Short section/transverse (cross section)





7

The straight, smooth cortical bone reflects sound very well resulting



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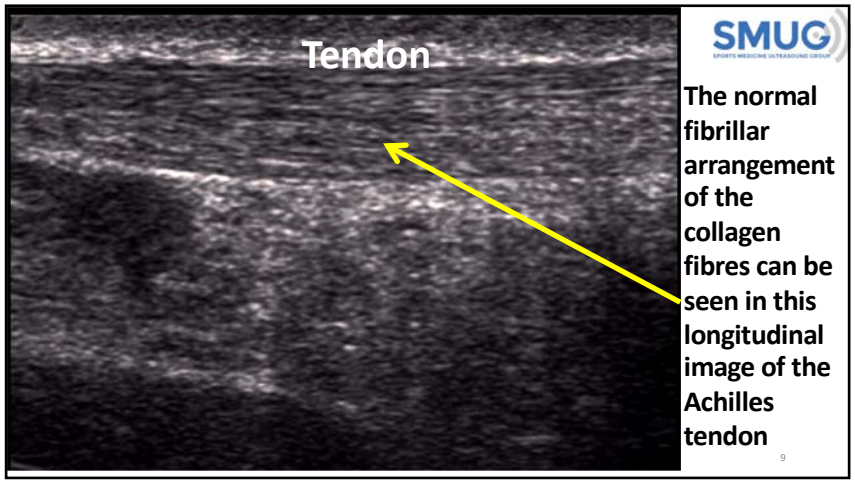
Dark area above the bone is the articular (hyaline) cartilage

8



The normal fibrillar arrangement of the collagen fibres can be seen in this longitudinal image of the Achilles tendon

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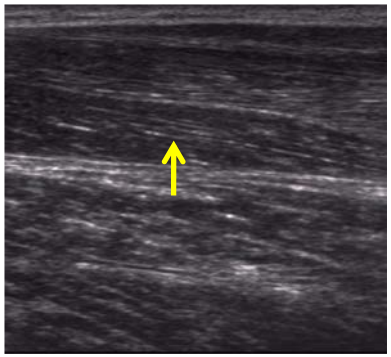
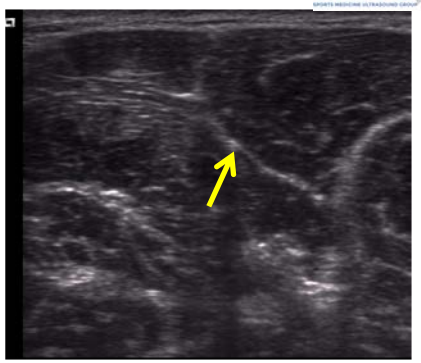
Muscle

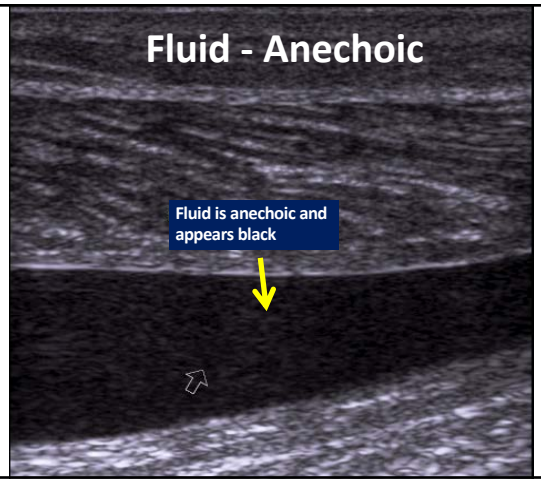


Fibrillar arrangement of collagen fibres in muscle tissue on longitudinal image



Transverse image of collagen fibres in muscle tissue

10



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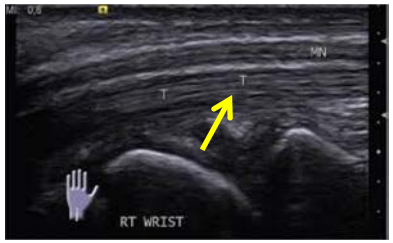
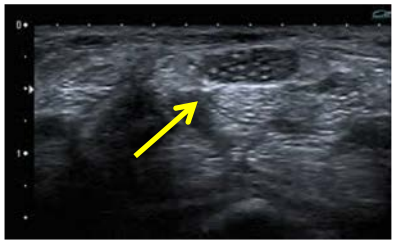
Nerve



Tubular structures containing hypo-anechoic discontinuous segments in longitudinal plane



"Pepper pot" or honeycomb appearance of nerve in transverse plane

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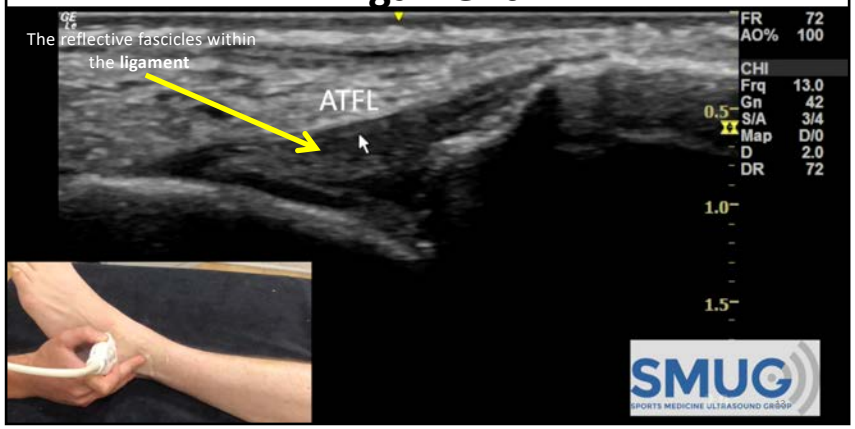
Ligament



Shoulder Pain

- **48 year old** - very fit and healthy male – in gym 3 x per week (strength training)
- 6 month history of right shoulder pain –In gym 60-75% ability
- **No trauma**
- **No sign of neck involvement**
- On examination – **Full AROM**
- Impingement tests positive
- No gross RC weakness
  - mild weakness at 90 degrees abduction and LR
- No **capsular restriction** passively
- No ACJ tenderness

Clinical assessment conclusions:

1/ Not capsular
2/ Not ACJ
3/ Labrum ? – no obvious signs/no hx
4/ Likely sub–acromial structure - Bursitis? Calcification? RC tear?

Conclusion = Impingement? (umbrella term)
- Pain arising from the sub-acromial structures

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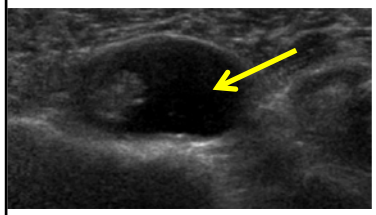
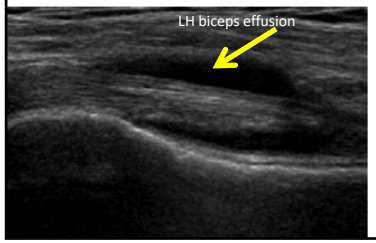
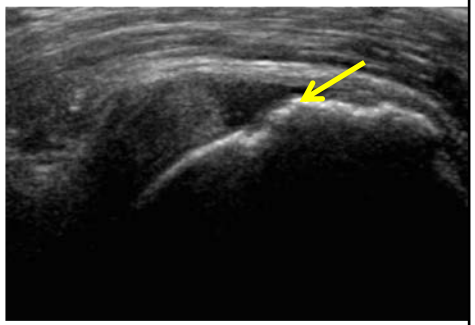


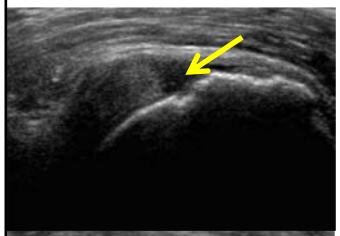


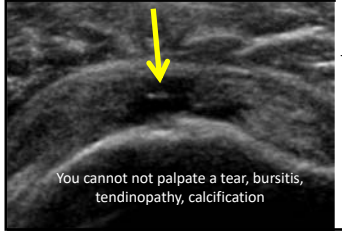
Signs of potential pathology specifically RC tear



Cortical irregularity

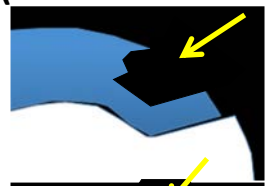
15





Full Thickness Tear (but not full width)

Longitudinal View



Transverse View

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Shoulder Pain

- 35 year old -very fit and healthy female
- 2 week history of right shoulder pain – pain ++ - waking at night
- **Insidious but sudden onset**
- Limited active range 25% all movement
- Impingement tests positive
- Pain limited all strength tests
- No **capsular restriction** passively (difficult to assess due to pain)
- No ACJ tenderness
- Osteopathic treatment x 3 - overall no improvement

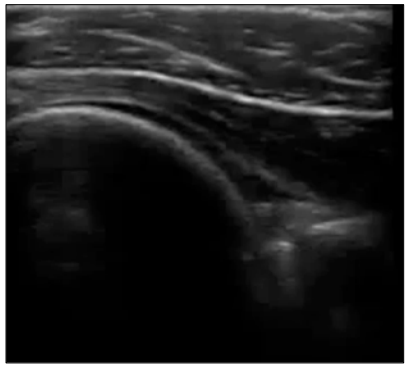
Clinical assessment conclusions:

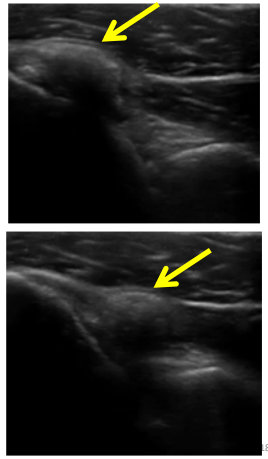
1/ Not capsular
2/ Not ACJ
3/ Labrum ? – no obvious signs/no hx
4/ Likely sub–acromial structure - Bursitis? Calcification? RC tear?

Conclusion = Impingement? (umbrella term)
- Pain arising from the sub-acromial structures

17

Infraspinatus calcification





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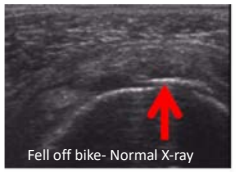
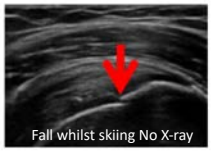
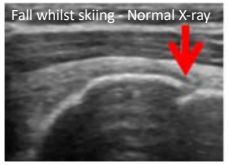
A missed diagnosis!
Greater tuberosity fractures







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Location of pain is not useful apart from AC joint

Pain on palpation is not useful apart fr…

'Impingement' Tests = Pain P… …ts (not specific)

Adhesive C… …al diagnosis (LR neutral & 90°)

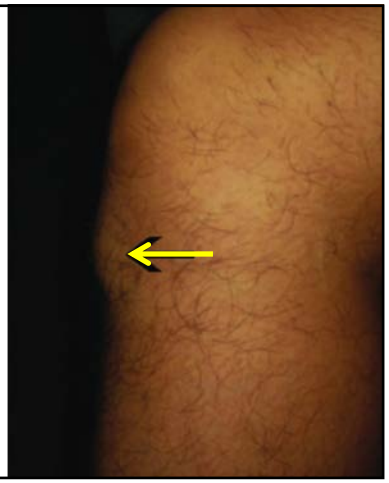
…ossible to make a definitive diagnosis with the **c…ical tests** we currently use for sub-acromial pathology

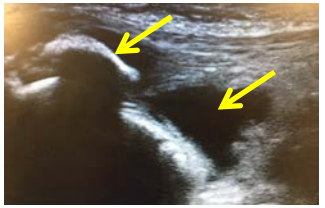
…and ultrasound excellent at looking for greater tuberosity fractures

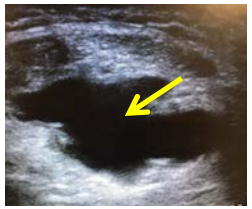
Problem: Many shoulder conditions can present very similarly clinically

Anterior Knee Pain

- **29 year old recreational footballer – male – referred by an Osteopath**
- **6 month history of anterior knee pain**
- **No trauma - had something similar as a kid and has occasionally felt pain there previously when kneeling**
- **Now unable to play football**
- **Had some physiotherapy**
  - **eccentric loading ' aggravated symptoms'**
  - **Acupuncture (10 sessions) – no help**







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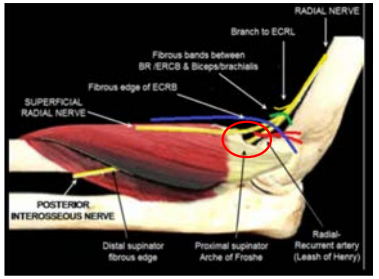
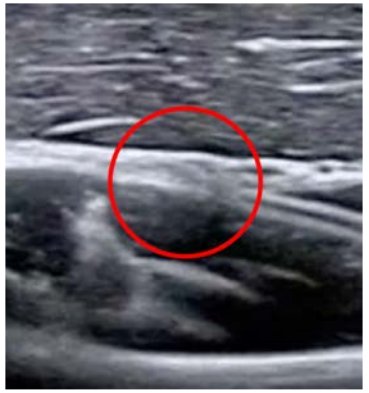
Forearm pain – 42 year old female

- **42 year old female** – referred by a physio
- **6 month history** of forearm pain
- **No trauma**
- **Getting worse - unable to exercises – low mood**

- Resisted CET – c/o pain
- TOP – not classic CET location - more distal
- Pain with gripping

- 1 x steroid injection GP – no help
- ESWT therapy – no help
- Physiotherapy – loading exs. - no help





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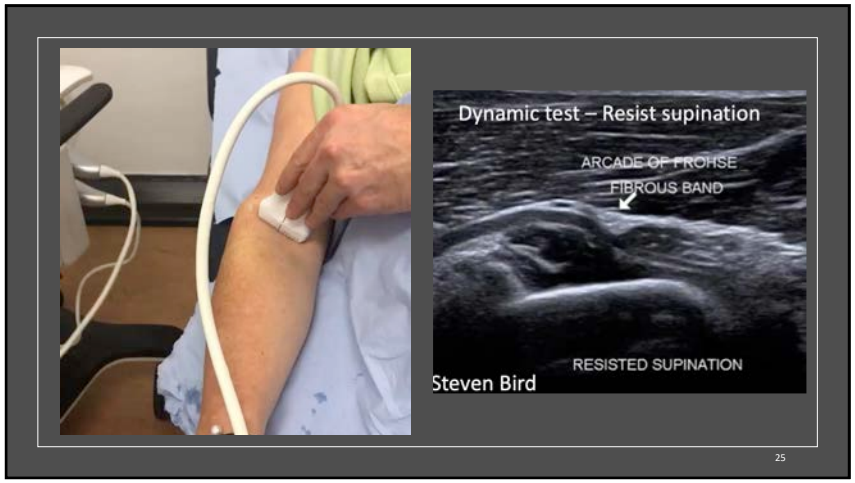

Anterior and posterior knee pain – ?Bakers Cyst?

- **32 year old – fit and well** – mother of one
- **In gym 3 x per week**
- Anterior knee pain with too much squatting & occ. posterior right knee pain - 2 weeks history - seen GP only
- **Described as deep throbbing pain**
- Pain deep squat (at end of range) and pain with right leg crossed over left knee
- No other symptoms

- Functional tests - single leg squat, hopping – no pain
- FROM of knee
- Resisted tests pain free
- Ligament and Meniscal tests negative

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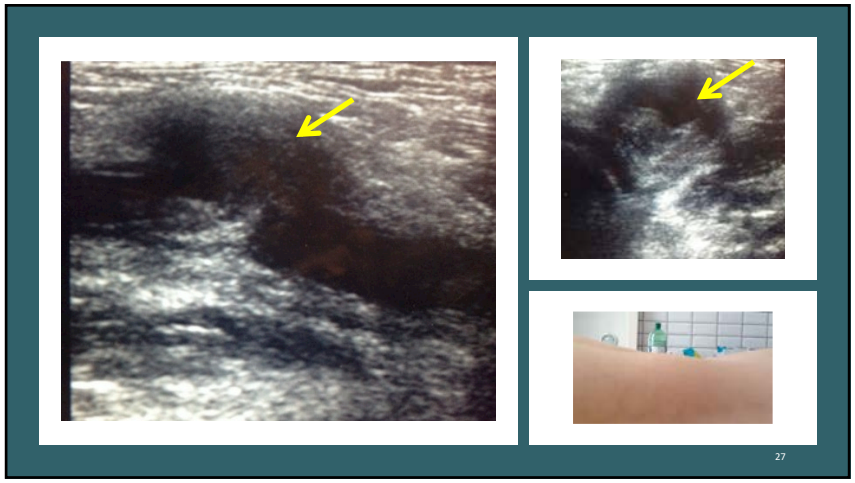

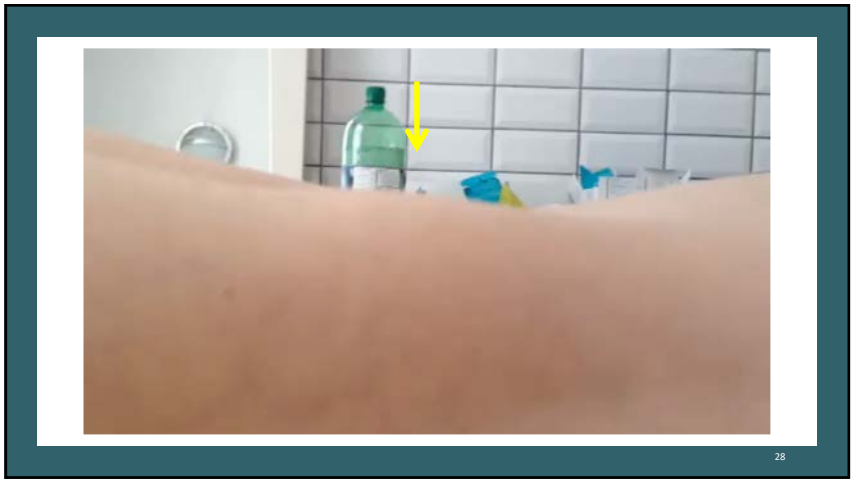

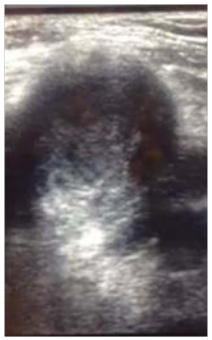

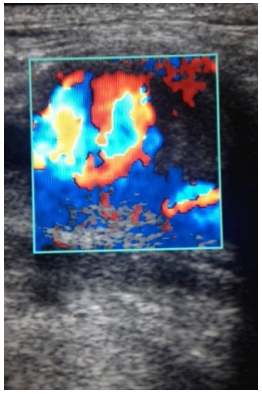

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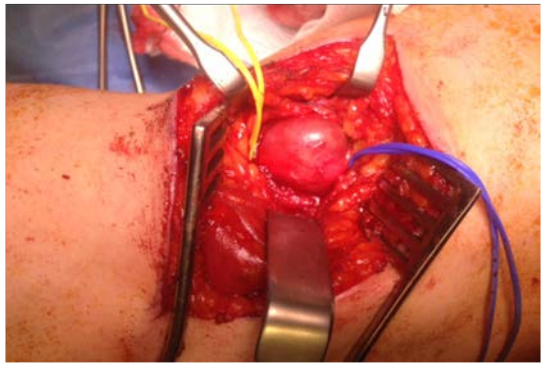

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Conclusion

- Ultrasound provides an extra layer of information:
  - makes assessment more specific - takes away the guesswork
  - Quick and accurate diagnosis as part of the clinical examination
  - High client satisfaction – immediate report of imaging findings
  - Be aware of the limitation's of clinical assessment and palpation
- Competency
  - Few formal training pathway
  - More research required on non-radiologists training pathways and competency
- Technology is rapidly developing
  - It is the future of MSK imaging
  - In 10 years time it will be mainly in the hands of clinicians

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Courses – All levels

Blog – useful articles

www.ultrasoundtraining.co.uk

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Thankyou for listening

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