Ultrasound for the coalface practitioner

Dr Lorenzo Masci

Consultant in Sports and Exercise Medicine

ISEH
Pure Sports Medicine

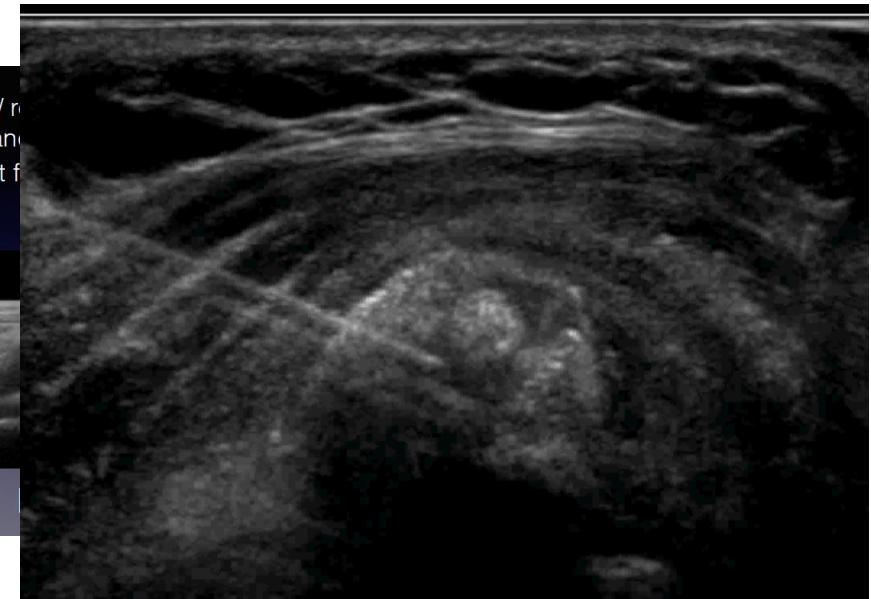Sports and exercise medicine consultant
Elite sport
Diagnosis is important
Diagnostic ultrasound
US-guided injections
Tendon pathology

"Over the past 10 years we have taught over a 1000 practitioners from 10 different disciplines and over 20 different countries"

SMUG
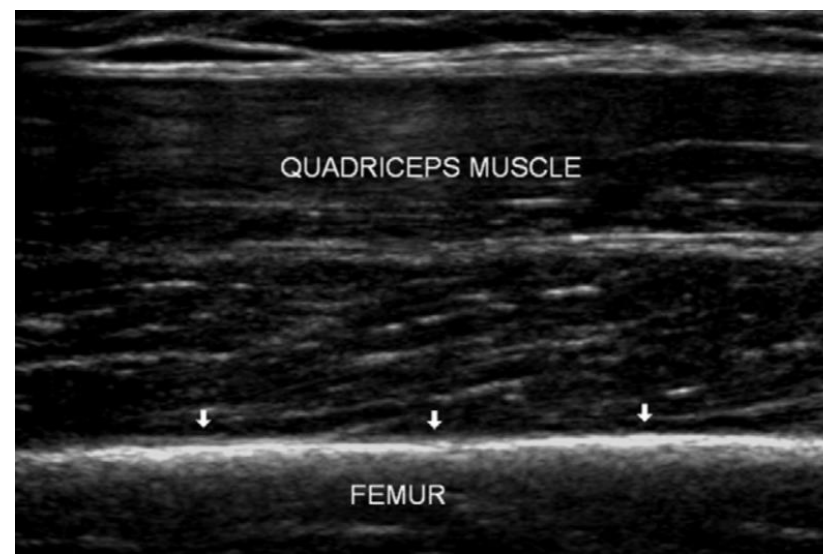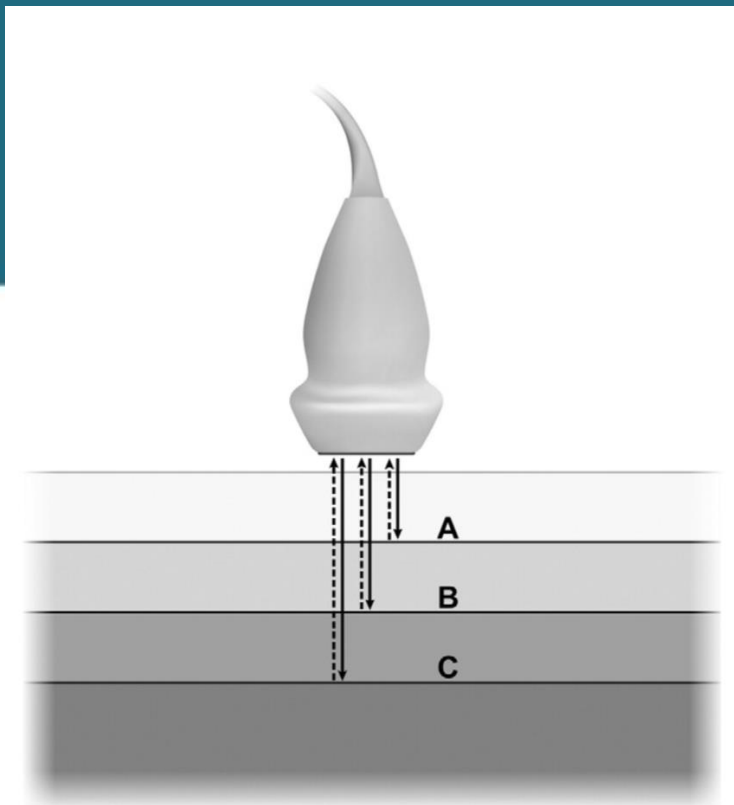SPORTS MEDICINE ULTRASOUND GROUP

Summary

US is most valuable in a clinical setting, where the clinician can interpret the images in conjunction with history & examination

"Ultrasound is the new stethoscope"
(BJSM, 2010)

(b)

A

B

C

QUADRICEPS MUSCLE

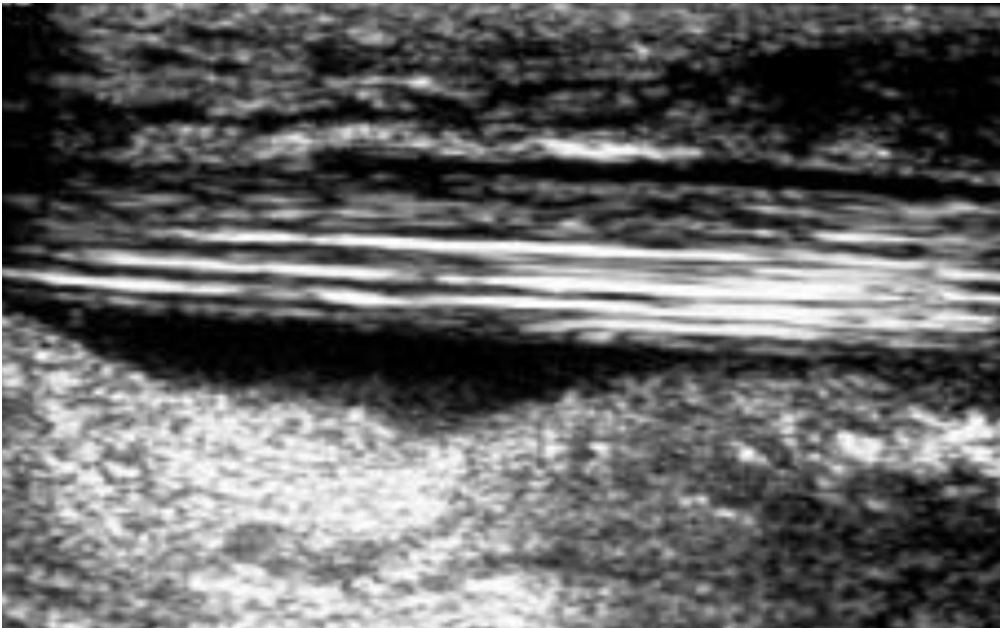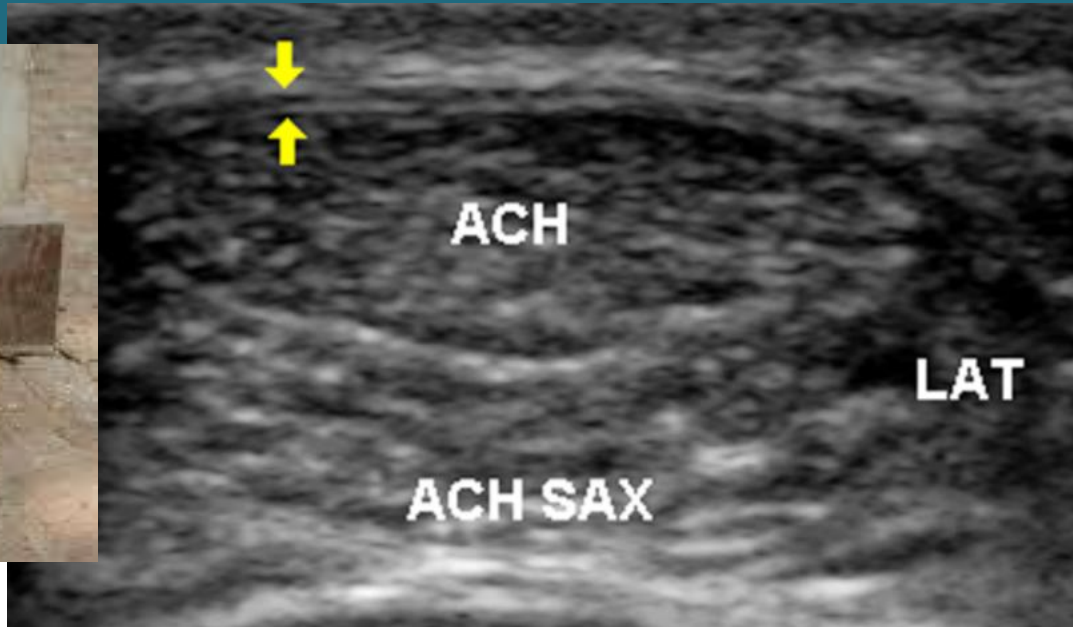FEMUR

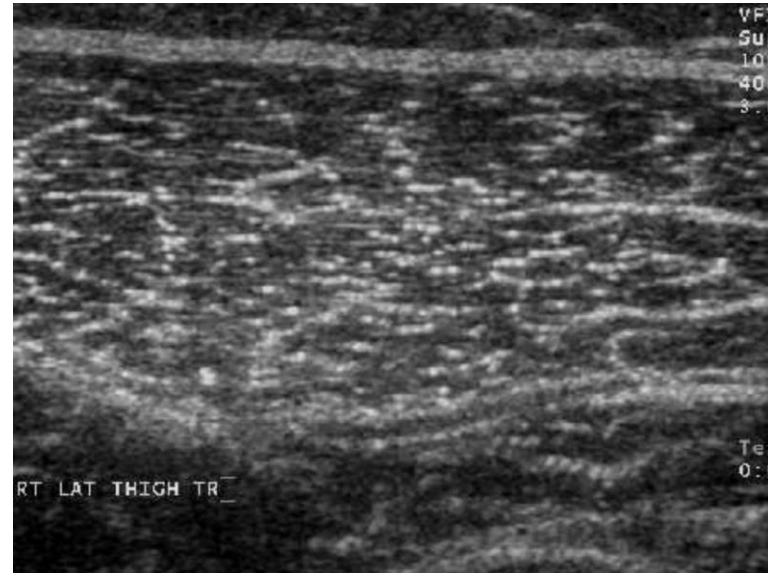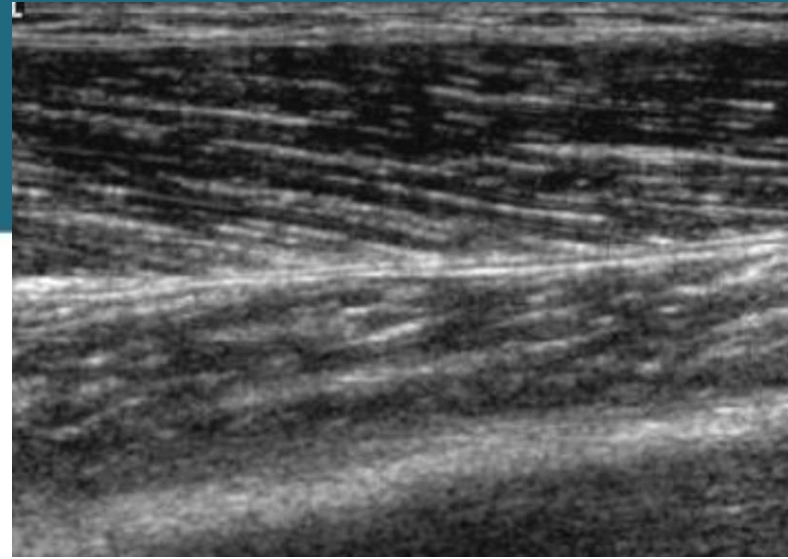**lorenzo masci**

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COMPARISONS BETWEEN DIFFERENT IMAGING MODALITIES USED IN THE ASSESSMENT OF MUSCULOSKELETAL DISORDERS*
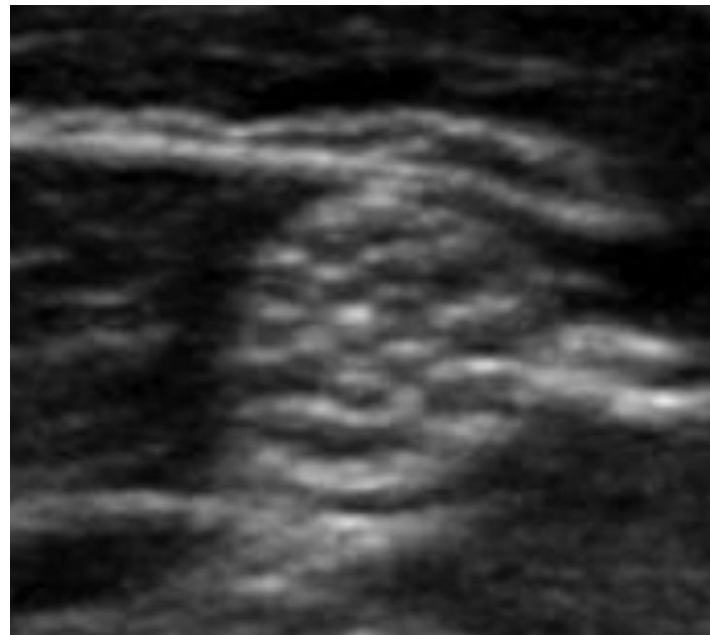
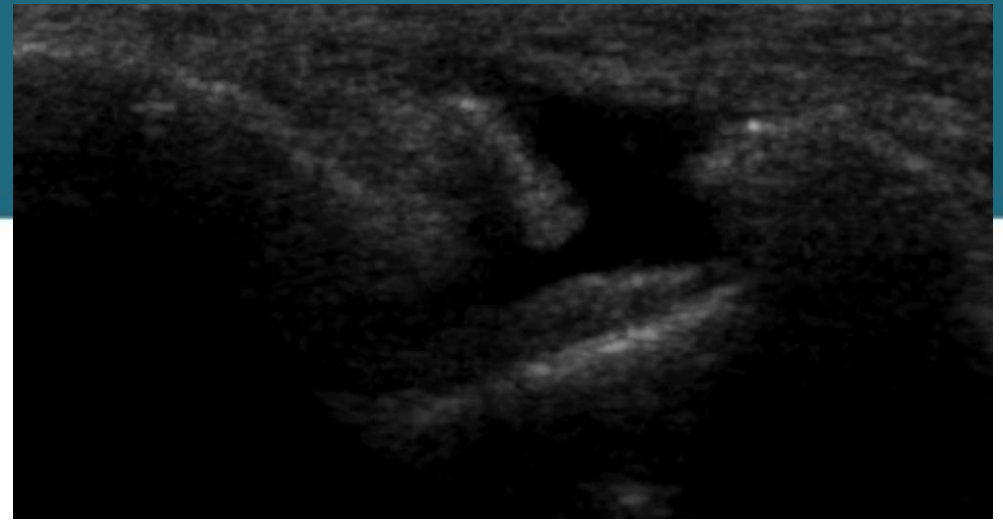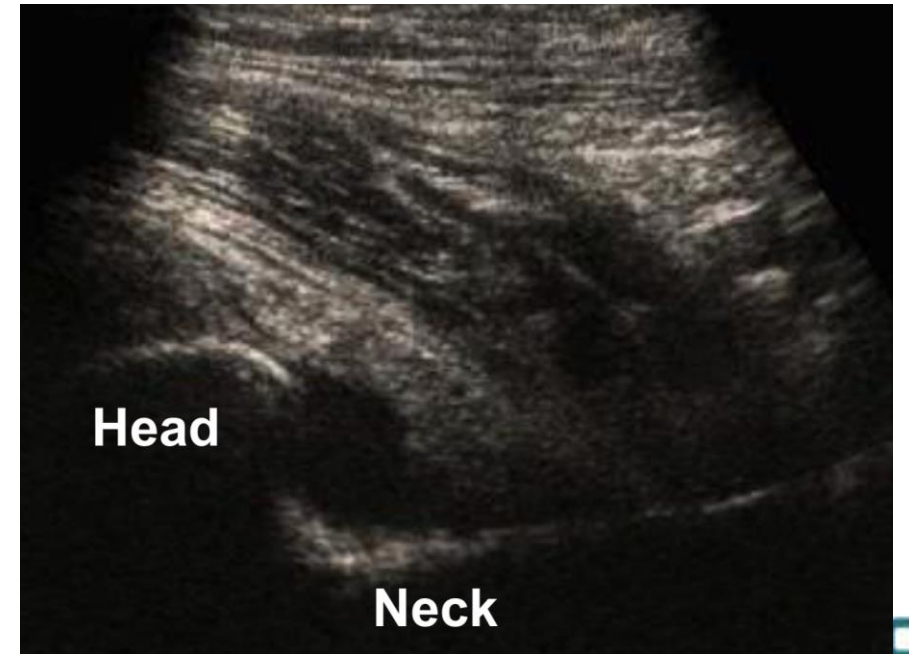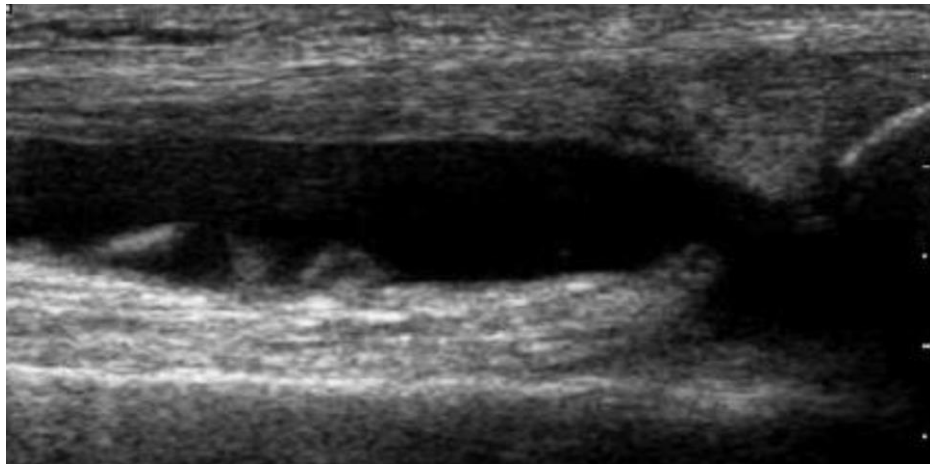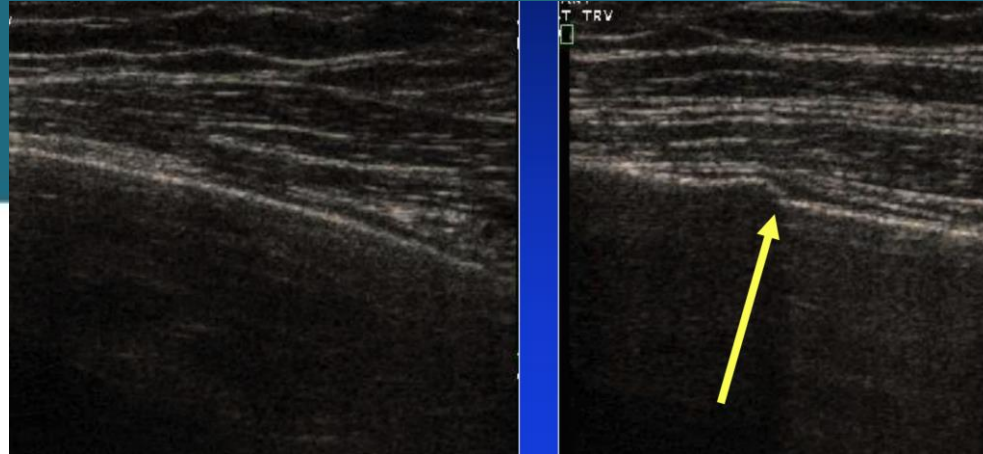|	MRI	USI	CT
Cost	Expensive	Inexpensive	Intermediate
Ease of accessibility	Difficult	Easy	Difficult
Ionizing radiation	None	None	Yes
Supports intervention	Yes	Yes	Yes
Operator-dependent	No	Yes	No
Imaging capability			
Planes	Multi	Variable axes to joint surface	Multi
Anatomy			
Muscle	Excellent	Good	Fair
Fat	Excellent	Fair	No role
Tendons and sheaths	Good	Excellent	No role
Ligaments	Good	Excellent	No role
Synovial membrane	Good	Excellent	No role
Bone	Excellent	Good	Good
Cartilage	Good	Excellent	Fair
Inflammation	Excellent	Good	No role
Number of joints/session	Few	Many	Few
Real-time scanning	Cardiac only	Yes	No
Patient tolerance	Variable	Good	Variable

*Adapted from Tan et al[127] with permission.
Abbreviations: CT, computerized tomography; MRI, magnetic resonance imaging; USI, ultrasound imaging.

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CARPAL TUNNEL TRANSVERSE
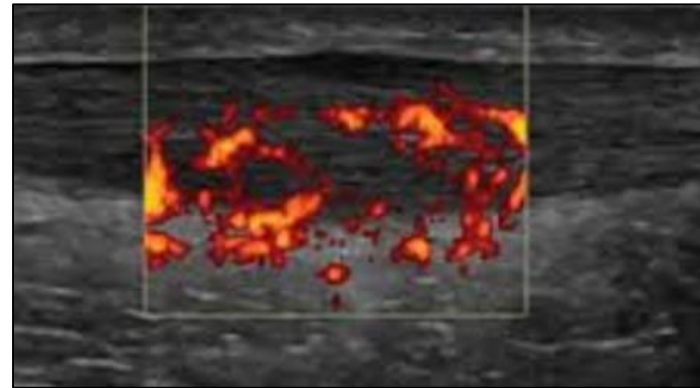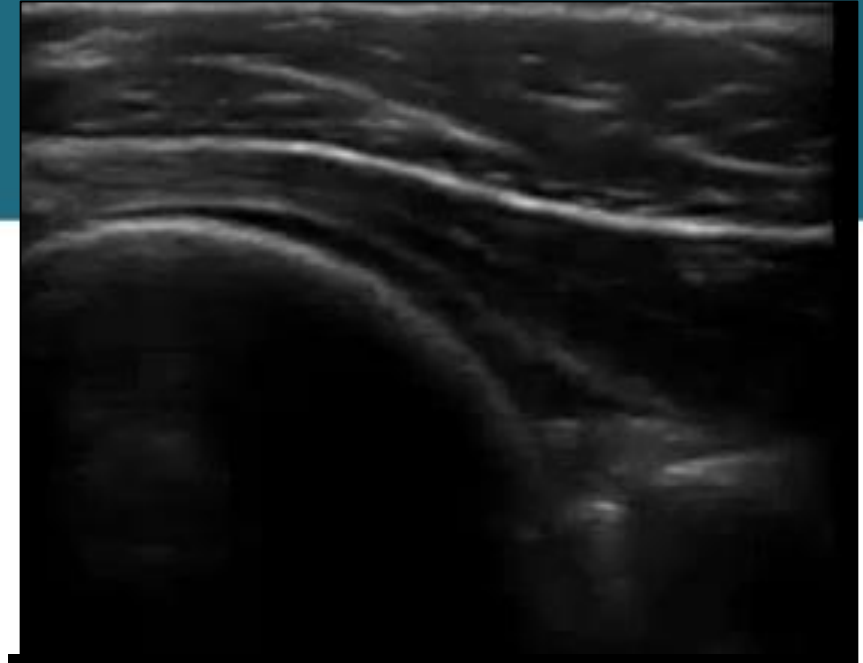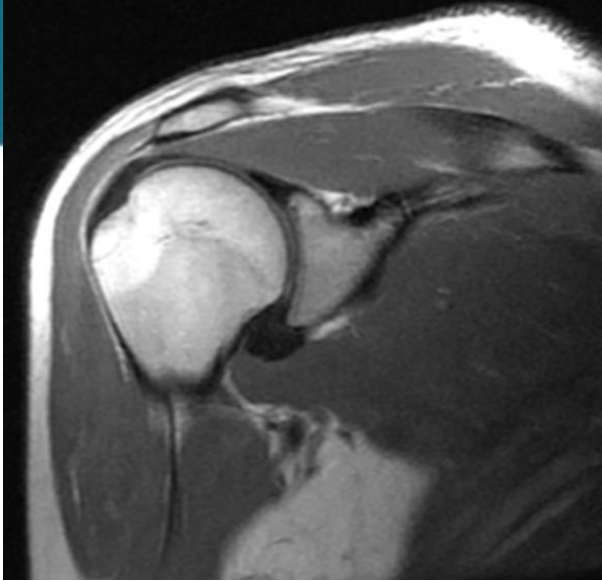
Head

Neck
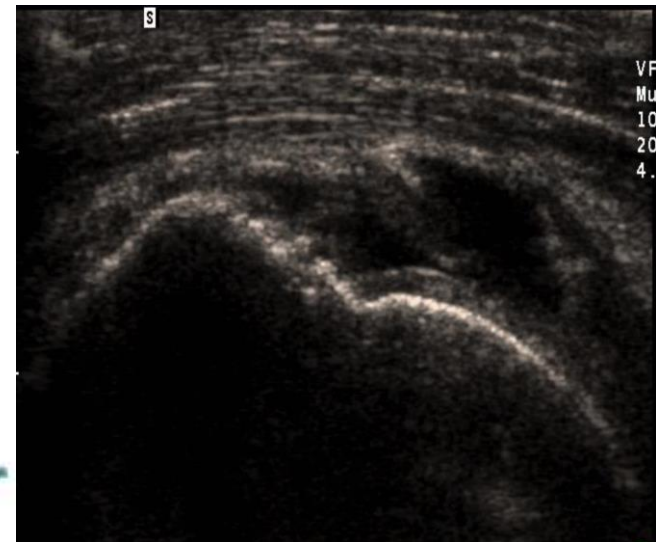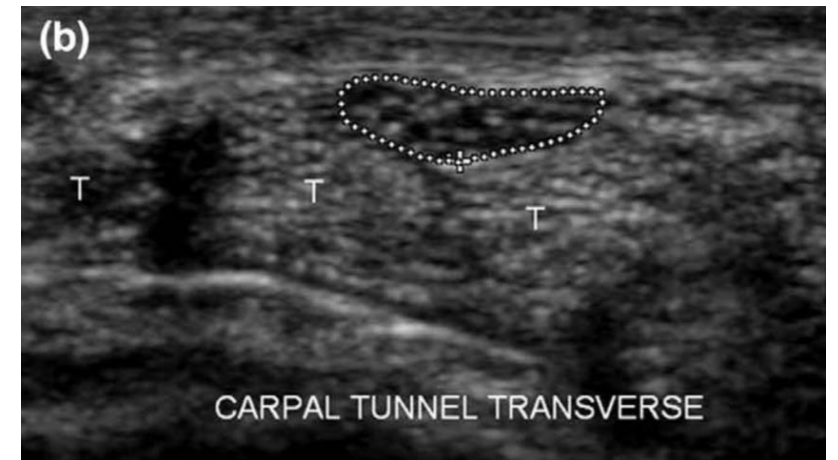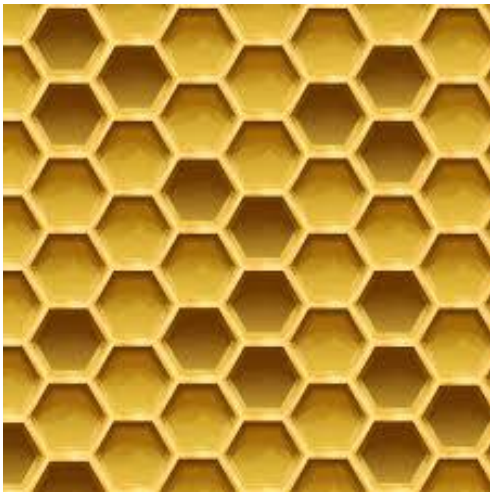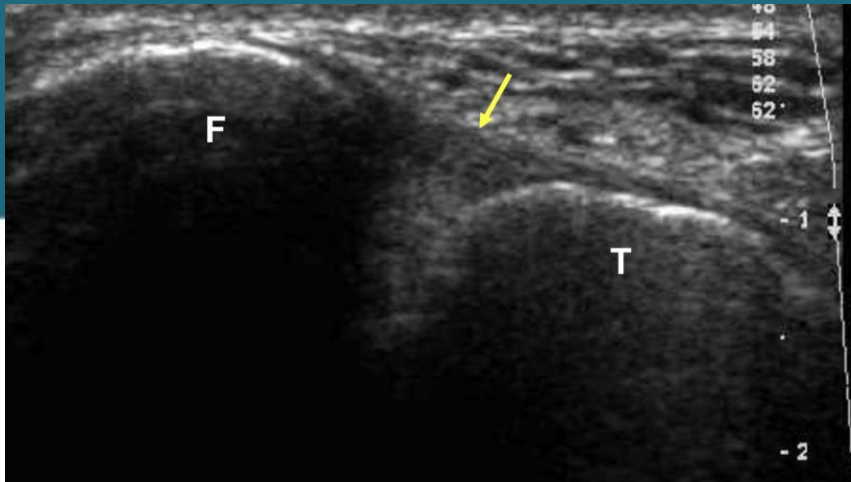
Advantages

Patients love it too!

Article

Physiotherapists utilizing diagnostic ultrasound in shoulder clinics. How useful do patients find immediate feedback from the scan as part of the management of their problem?

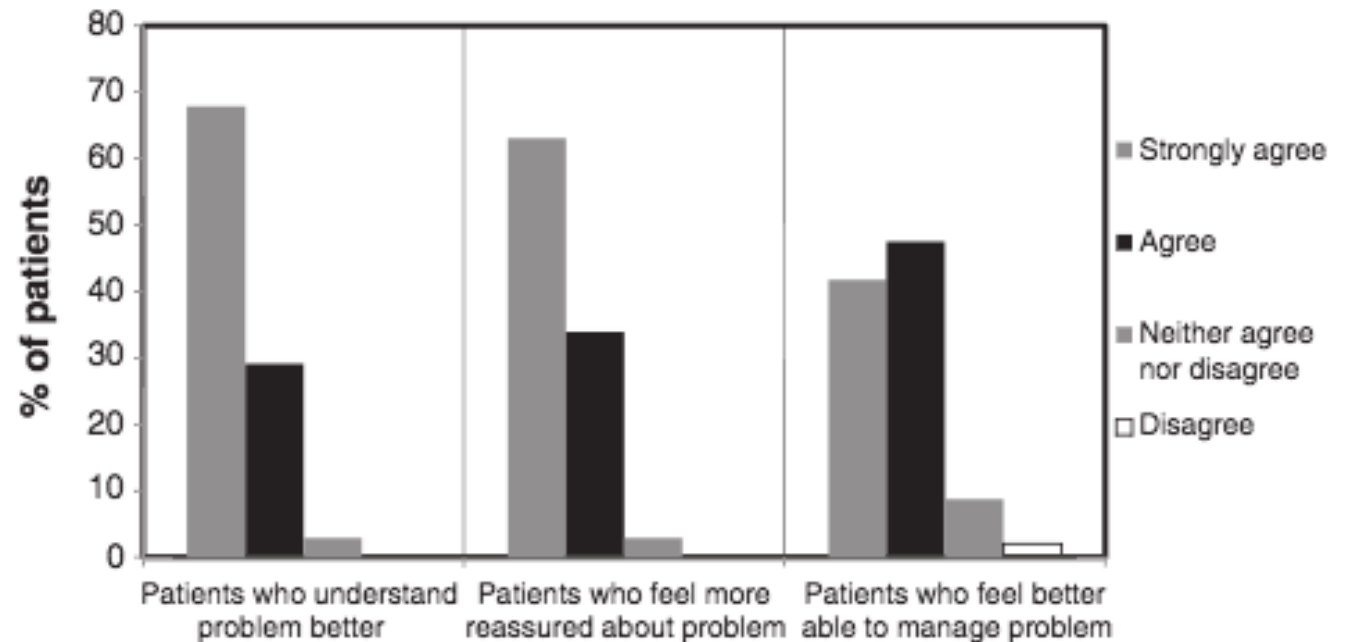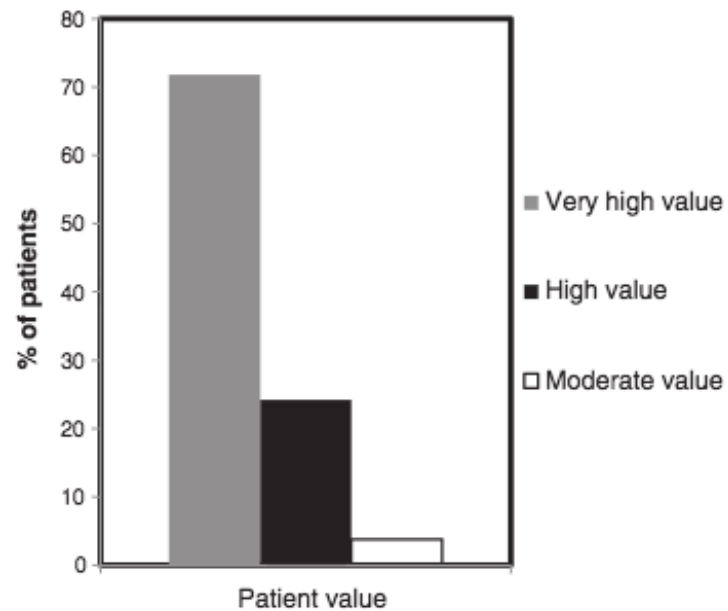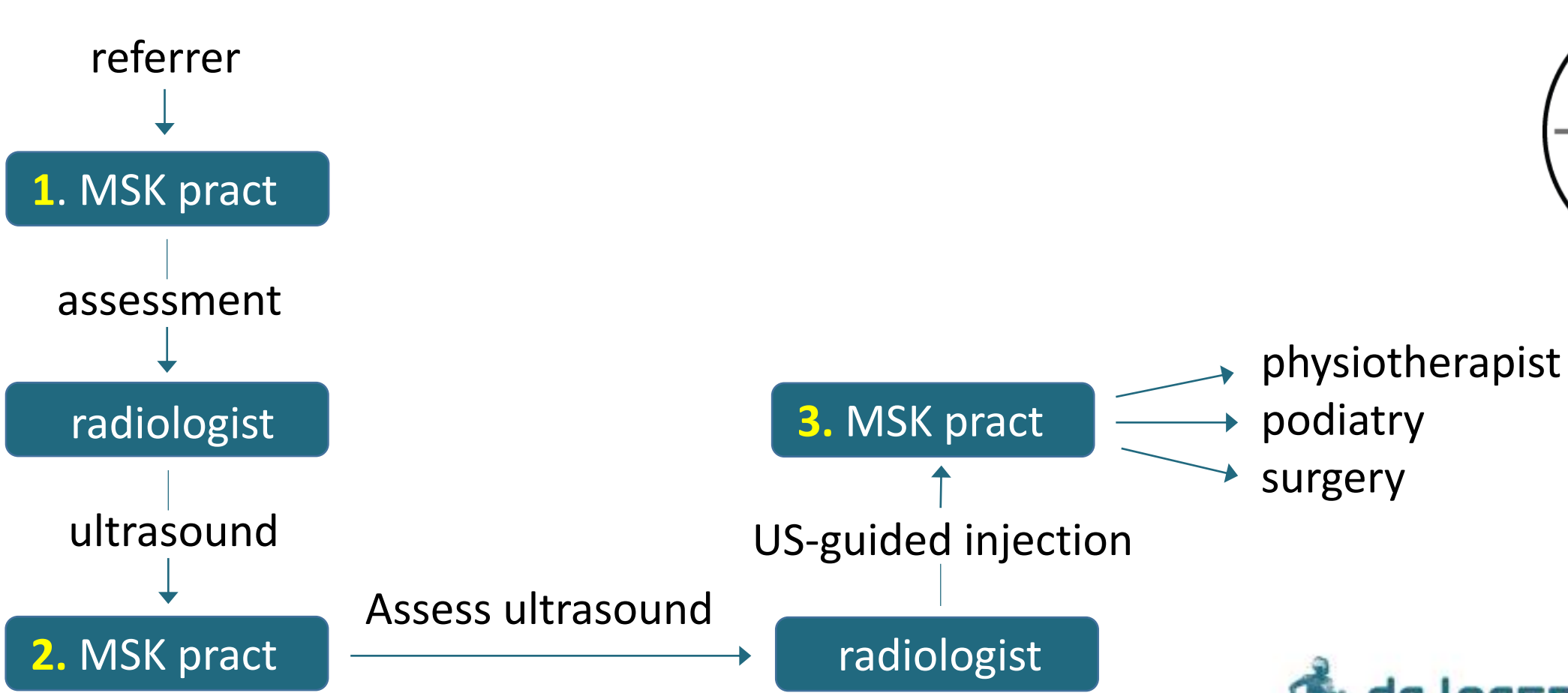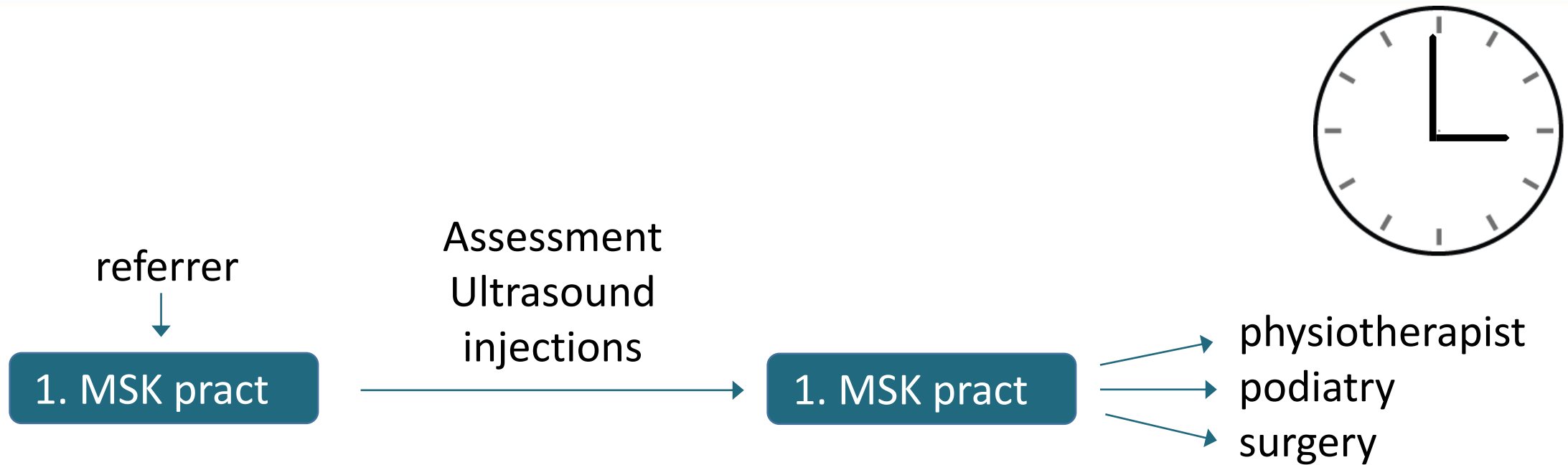September 2017 · Musculoskeletal Care

DOI · 10.1002/msc.1213

FIGURE 2 Patient perceptions of the overall value of an ultrasound scan

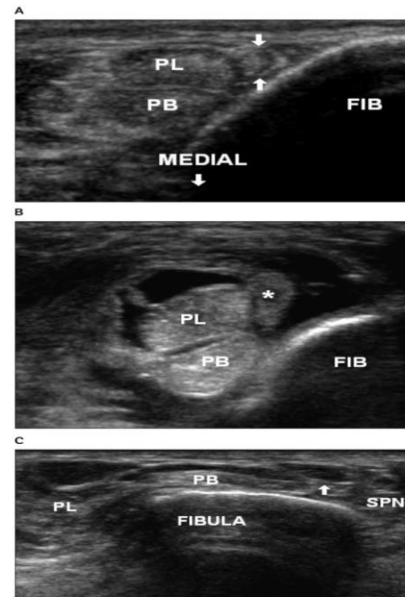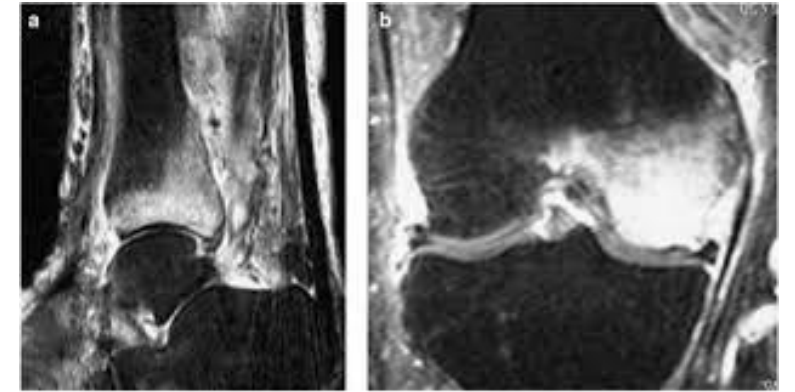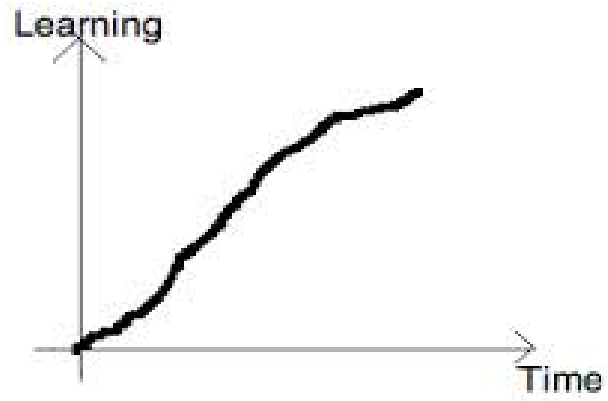# Traditional pathway

referrer

1. MSK pract

assessment

radiologist

ultrasound

2. MSK pract → Assess ultrasound → radiologist

US-guided injection

3. MSK pract → physiotherapist
→ podiatry
→ surgery

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One stop shop is much better: saves time

referrer

Assessment
Ultrasound
injections

| 1. MSK pract | → | 1. MSK pract |

physiotherapist
podiatry
surgery

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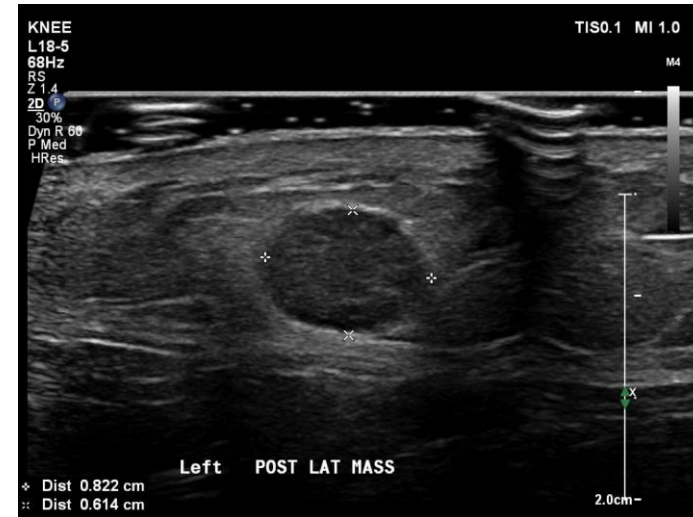SPORT DOCTOR LONDON

Disadvantages

How do I use ultrasound as a clinician?

- **YES:**

  Assist in diagnosis/management

  ?guide rehabilitation

  injections

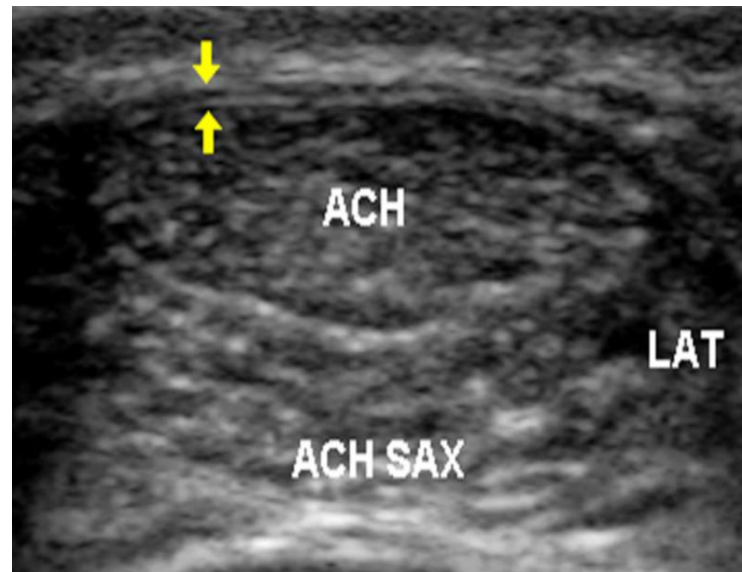- **NO:**
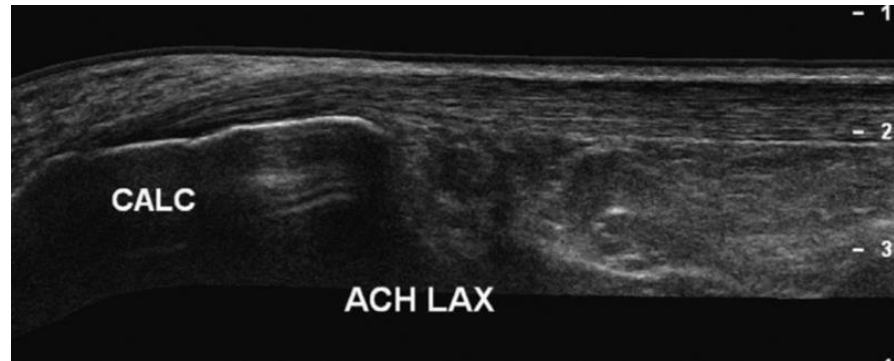
  ultrasound service/report

  scan lumps and bumps
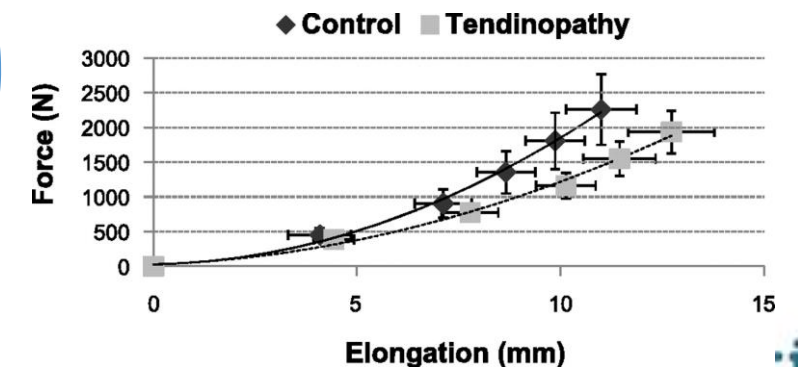
How do I use ultrasound for managing tendon disease?
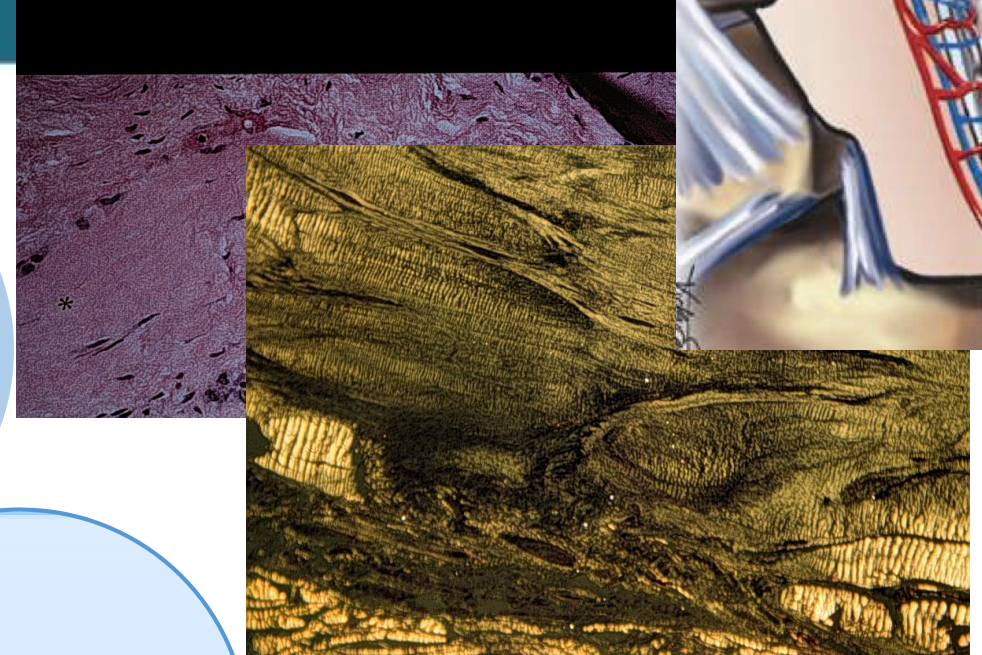
Normal tendon
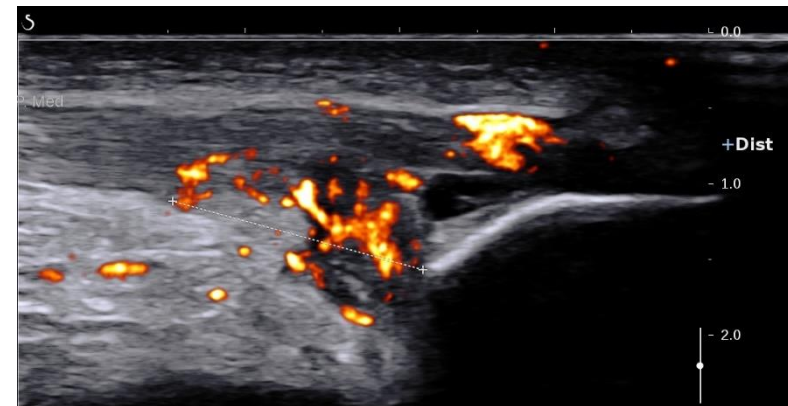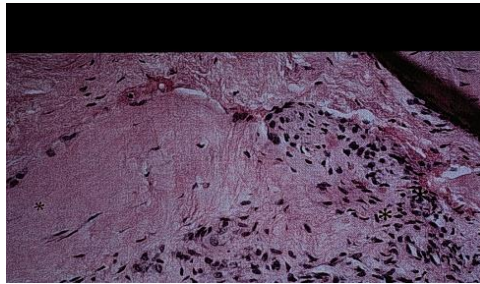
The complexity of tendon disease

Structure and Mechanical properties

Pain

Function

Imaging defines structural change
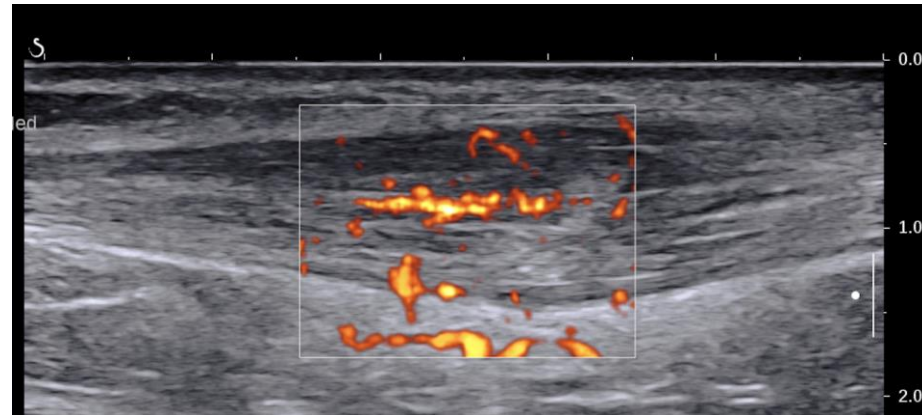
Tendon disease

Imaging predicts future symptoms

Review

Can ultrasound imaging predict the development of Achilles and patellar tendinopathy? A systematic review and meta-analysis

Seán McAuliffe[1], Karen McCreesh[1], Fiona Culloty[1], Helen Purtill[2], Kieran O'Sullivan[1]
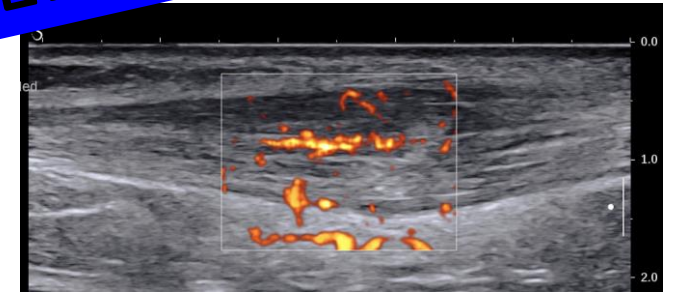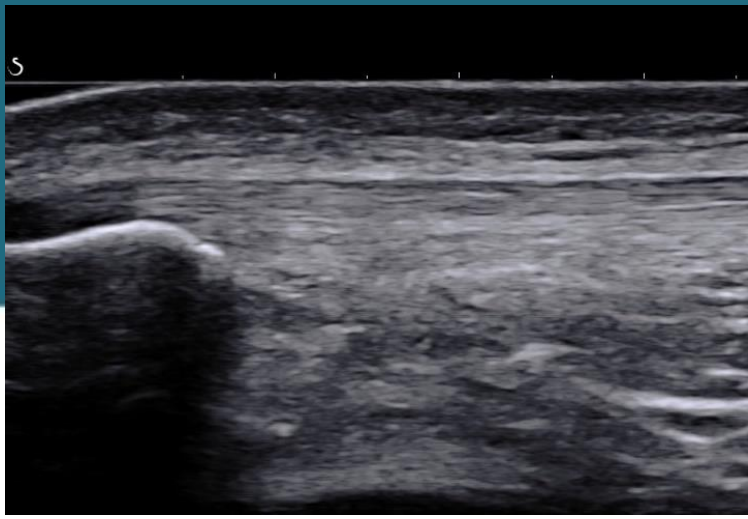
Achilles **RR 7.33**

Patella **RR 4.0**
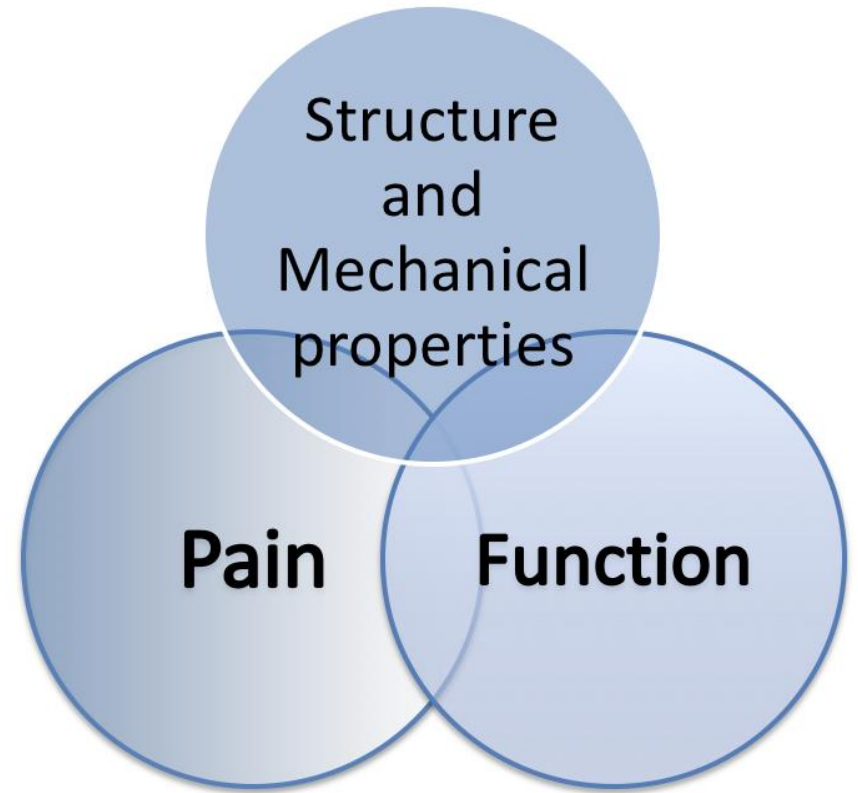
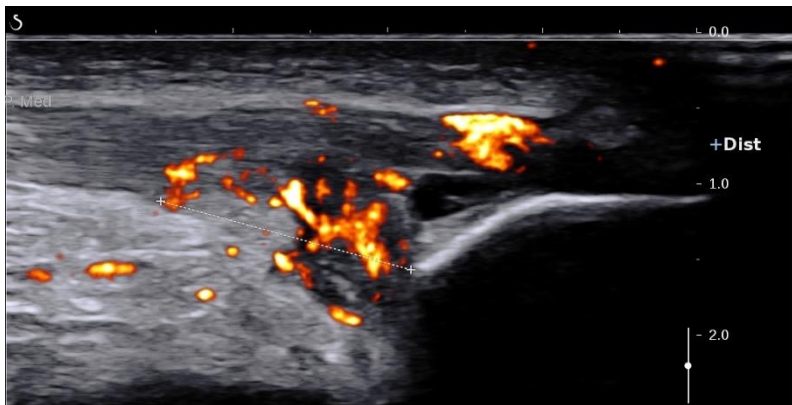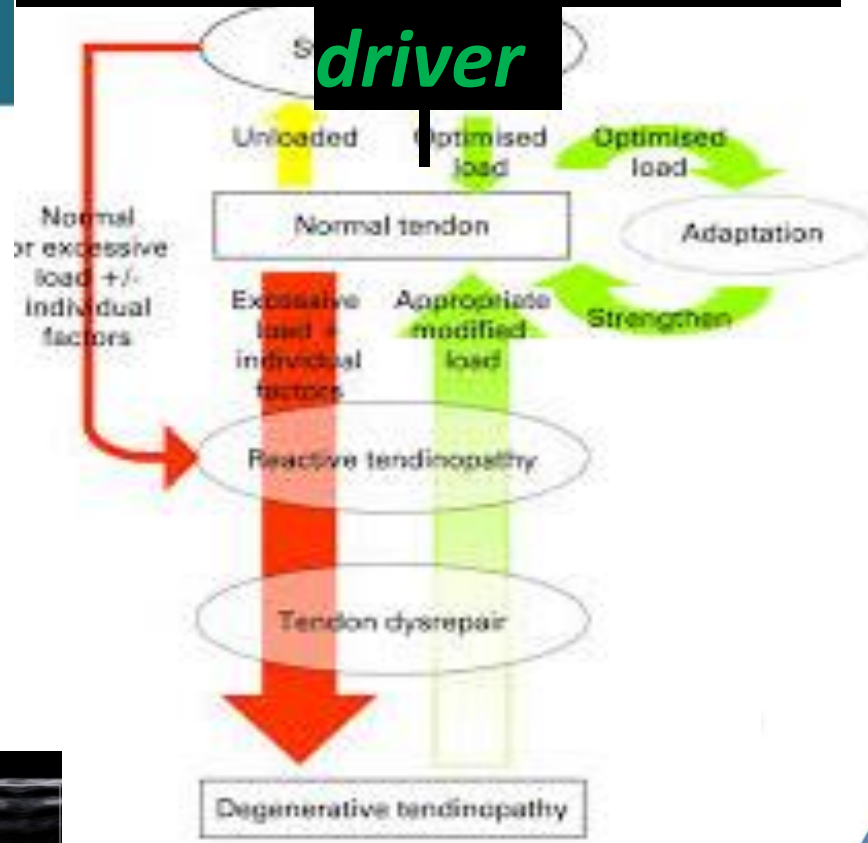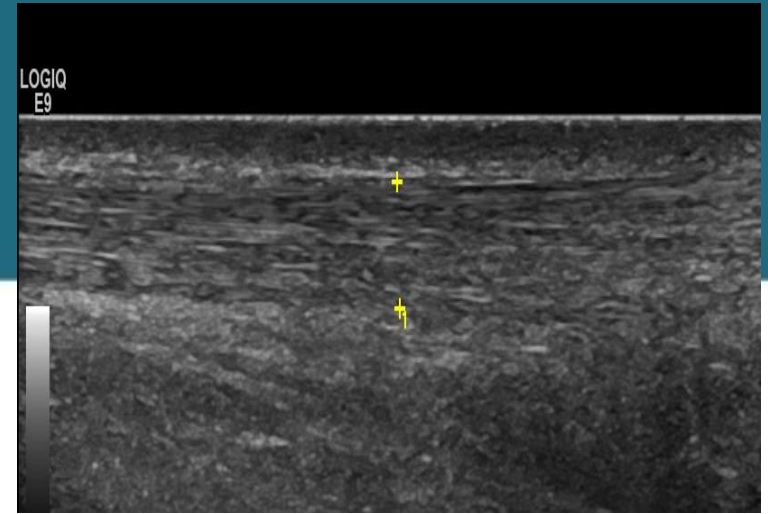# BUT Structure disconnect

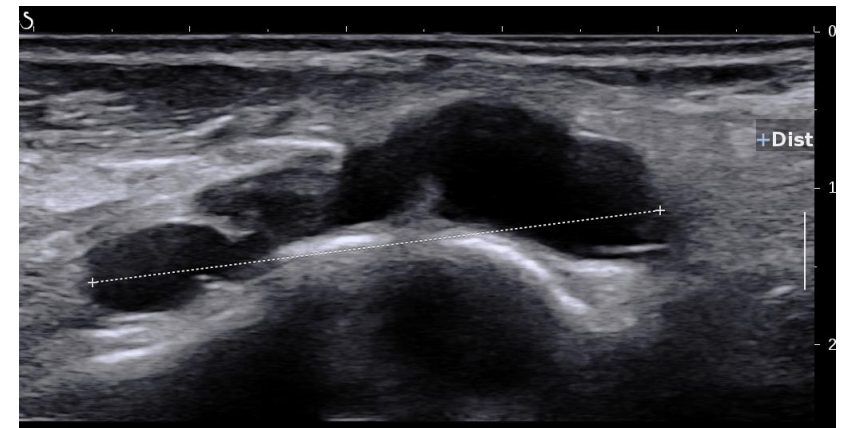*correlation between structure and pain is not direct*

IMAGING NOT USEFUL IN CLINICAL MANAGEMENT

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Normal scan excludes tendon disease as pain driver

Structure and Mechanical properties

Pain

Function
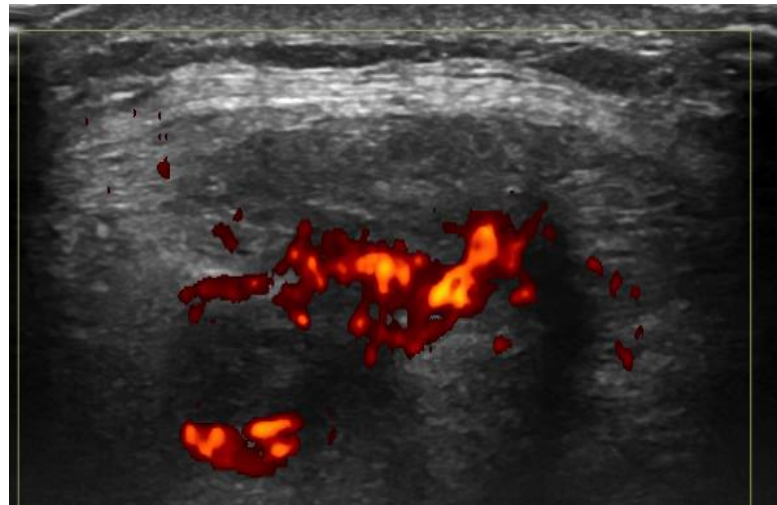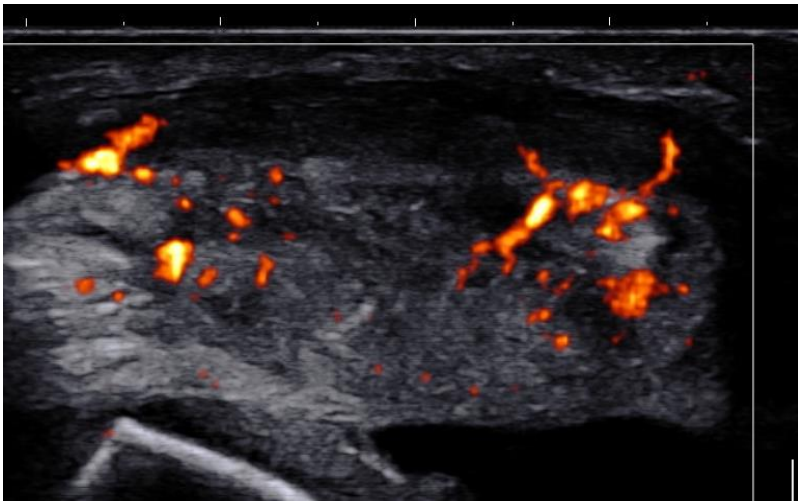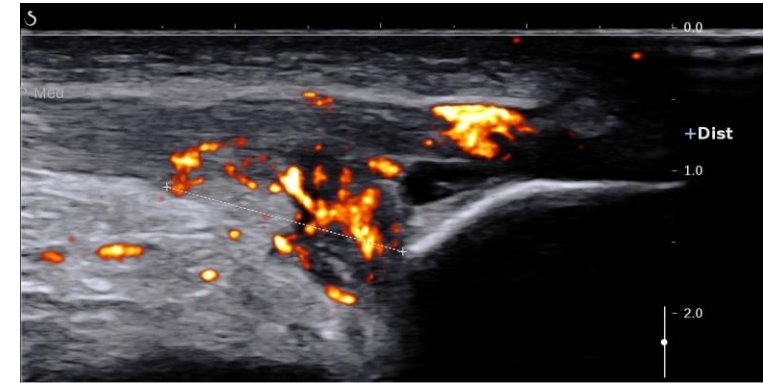
Example

- 40 year old triathlete
- Achilles pain
- 6 months heavy loading
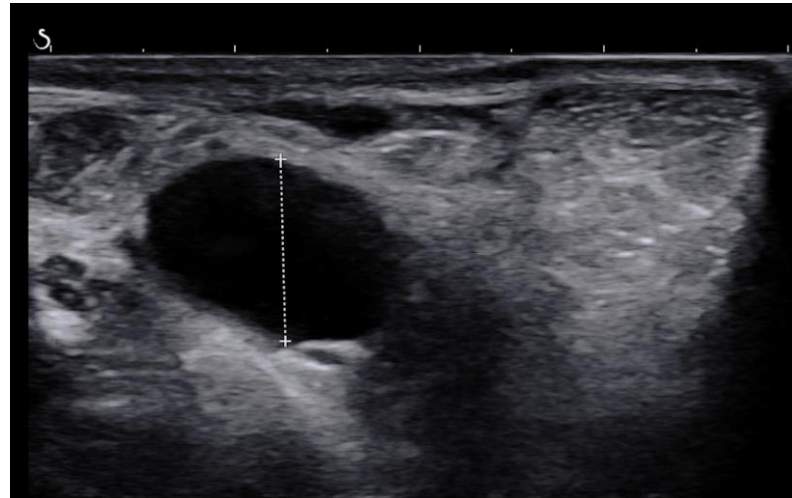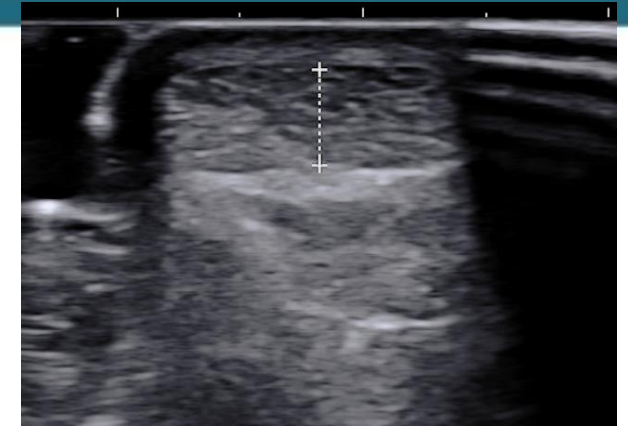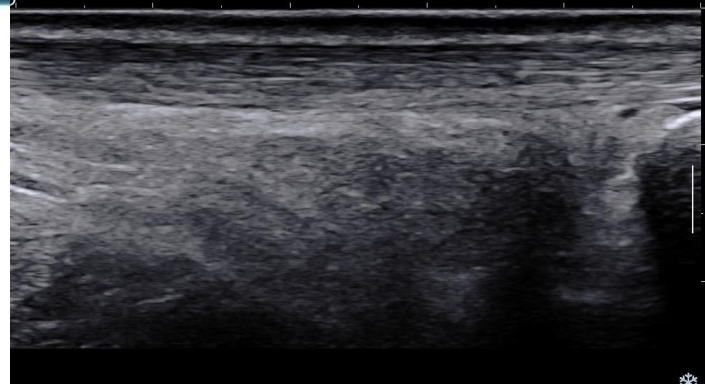
Imaging is important in tendinopathy management

- Normal scan excludes tendon disease
- Imaging can confirm differentials

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But there are limitations to imaging tendons...

cannot be used as sole diagnostic criterion
cannot be used to monitor treatment

How to become competent in ultrasound

Month 1
SMUG Introduction to MSK Ultrasound
(16 hours/2 days)

Supervision Days - Each month has a specific joint focus (see below). This provides the focus for the morning session. The afternoon session is a practical workshop where delegates get the opportunity to scan models and patients under very close supervision. Any scans carried out on the day will form part of the assessment process and will be signed off by the tutor. It is anticipated that approximately 30 scans will be achieved by each delegate on each day. Each session delegates will review their log book/practice portfolio with their tutor.

Month 2 Shoulder (7 hrs)	Month 3 Knee (7 hrs)	Month 4 Hip (7 hrs)	Month 5 Ankle/foot (7 hrs)	Month 6 Elbow (7 hrs)	Month 7 Wrist/hand (7 hrs)

Month 8 - Competency Exam – Practical exam (one hour) and assessment of clinical log book (250 scans)

Take home messages:
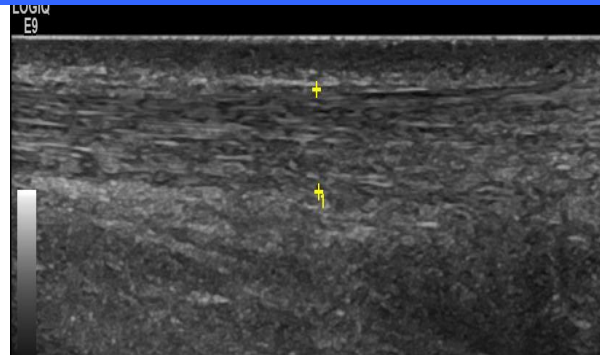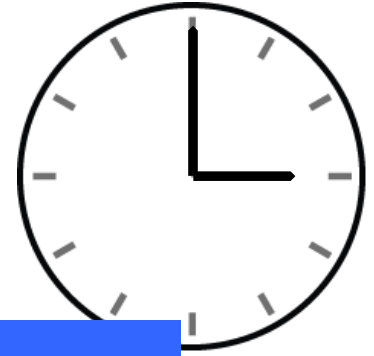
Ultrasound is an extension of clinical assessment

Advantages

One stop shop

normal sca...

Patients lo...

US is most valuable in a clinical setting, where the clinician can interpret the images in conjunction with history & examination

- **Introduction to MSK Ultrasound**

- NEW COURSE for 2018 - SMUG and the Shoulder Doc – Upper Limb only

- **Cadaveric Guided Injection Course**

- **Advanced MSK Ultrasound**

- **SMUG MSK Ultrasound Mentor**ship Programme – competence based pathway

- For more details email info@ultrasoundtraining.co.uk

- Visit www.ultrasoundtraining.co.uk for more information