

MSS Summary

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We'll talk about the following at this summary:

- Gross anatomy
 - Common presenting symptoms
 - Extra-articular symptoms
 - Completing the History: Past Medical, Surgical, Drug, Family, Social, Environmental, Occupational
 - Physical Examination
-

Physical Exam Principles

- **LOOK, FEEL, MOVE, SPECIAL TESTS**
 - Observe **general appearance**
 - **Do NOT cause additional pain**
 - **Compare both sides**
 - Perform **active before passive** movements
 - Use **standard terminology**
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The Human Skeleton

Type	Number of Bones
Axial Skeleton	80
Appendicular	126
Total	206 bones

History Taking – Common Presenting Symptoms رح نحكي عن كل نقطة منهم بالتفصيل

- Pain
 - Stiffness
 - Swelling
 - Erythema and warmth
 - Locking and triggering
 - Extra-articular symptoms
-

Pain: Assessment Structure

Feature	Description/Types
Site	Joint, Muscle, Bone, Tendon, Ligament. Localized vs Multiple.
Onset	Immediate (trauma), Overnight (crystal), Within 24h (inflammatory), After 24h (septic).
Character	See table below.
Radiation	See details below.
Associated Symptoms	Swelling, Redness
Timing	Frequency, Duration, Periodicity
Exacerbating/Relieving Factors	1.Osteoarthritis / mechanical damage → worsens with exercise 2.Inflammatory arthritis → worsens with rest 3.Septic arthritis → painful both at rest and with movement
Severity	Severe: trauma/crystal/septic, Disproportionate: compartment syndrome, Painless but deformed: Charcot.

Pain Character Table

Type	Description
Localized	Tumor, Osteomyelitis, Osteonecrosis, osteoid osteoma (a benign bone tumor)
Diffuse	Osteomalacia
Bone Pain	Deep, boring, worse at night
Muscle Pain	Aching, stiffness with movement
Nerve Pain	Shooting, due to impingement
Fracture Pain	Sharp/stabbing, worsens with movement, relieved by rest and splintage
Progressive	Degenerative (Progressive joint pain in patients over 40 y.o is most commonly caused by osteoarthritis.)
Constant with variation	Fibromyalgia*

**from the book:* Fibromyalgia, a chronic pain syndrome, causes widespread, constant pain with little diurnal variation, which is poorly controlled by conventional analgesic/anti-inflammatory drugs

Pain Radiation Examples

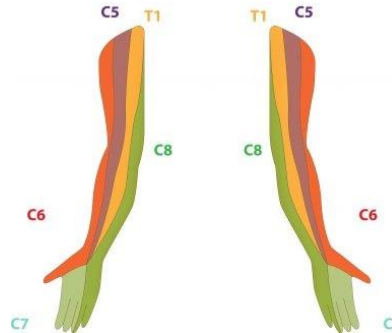
- **Intervertebral Disc Prolapse** → Lower leg pain

- **Carpal Tunnel Syndrome** → Hand pain
- **Neck Pain** → Shoulder or scalp
- **Hip Pain** → Groin, possibly thigh or knee

Extra pic to make it easier to remember

13.3 Common patterns of referred and radicular musculoskeletal pain	
Site where pain is perceived	Site of pathology
Occiput	C1, 2
Interscapular region	C3, 4
Tip of shoulder, upper outer aspect of arm	C5
Interscapular region or radial fingers and thumb	C6, 7
Ulnar side of forearm, ring and little fingers	C8
Medial aspect of upper arm	T1
Chest	Thoracic spine
Buttocks, knees, legs	Lumbar spine
Lateral aspect of upper arm	Shoulder
Forearm	Elbow
Anterior thigh, knee	Hip
Thigh, hip	Knee

Dermatome Map of the Upper Limb (Anterior View)



📌 Joint Pain & Pathology Clues

- **Red, hot, tender 1st MTP joint** → Suggests gout
- **Multiple swollen joints** → Inflammatory arthritis

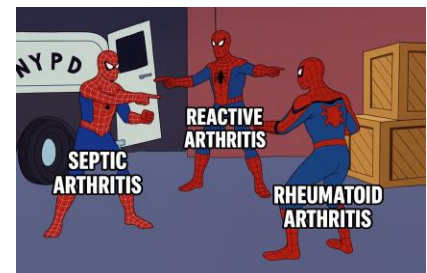
🕒 Timing Details

Pattern	Suggests
Intermittent, resolves between episodes	Palindromic rheumatism
Flitting pain over days*	Rheumatic fever, Gonococcal arthritis
Morning stiffness > several weeks	Inflammatory arthritis
Chronic pain with normal exam	Fibromyalgia

**From the book: 'Flitting' pain, starting in one joint and moving to others over a period of days*

🔥 Exacerbating / Relieving Factors

Pattern	Suggests
Worse at rest	Inflammatory arthritis
Worse with exercise	Osteoarthritis
Pain with Both	Septic arthritis



📌 Pain Severity Categories

- **Severe Pain** → Trauma, crystals, sepsis
- **Disproportionate Pain**
 - Acute: Compartment syndrome (↑pressure in a fascial compartment, compromising perfusion and viability)
 - Chronic: Complex regional pain syndrome
- **Painless Severe Deformity** → Charcot joint (neurological), e.g. in DM, syphilis (tabes dorsalis)
- **Partial muscle tear** → Painful
- **Complete rupture** → May be painless

Pics of the book:

13.1 Common causes of arthralgia (joint pain)
Infective
<ul style="list-style-type: none"> • Viral (e.g. rubella, parvovirus B19, mumps, hepatitis B, chikungunya) • Bacterial (e.g. staphylococci, Mycobacterium tuberculosis, Borrelia) • Fungal
Postinfective
<ul style="list-style-type: none"> • Rheumatic fever • Reactive arthritis
Inflammatory
<ul style="list-style-type: none"> • Rheumatoid Arthritis
Degenerative
<ul style="list-style-type: none"> • Osteoarthritis
Tumour
<ul style="list-style-type: none"> • Primary (e.g. osteosarcoma, chondrosarcoma) • Metastatic (e.g. from lung, breast, prostate) • Systemic tumour effects (e.g. hypertrophic pulmonary osteoarthropathy)
Crystal formation
<ul style="list-style-type: none"> • Gout, pseudogout
Trauma
<ul style="list-style-type: none"> • For example, Road traffic accidents
Others
<ul style="list-style-type: none"> • Chronic pain disorders (e.g. fibromyalgia (usually diffuse pain)) • Hypermobile Ehler's Danlos syndrome

13.2 Causes of muscle pain (myalgia)
Infective
<ul style="list-style-type: none"> • Viral: Coxsackie, cytomegalovirus, echovirus, dengue, SARS CoV2 • Bacterial: <i>Streptococcus pneumoniae</i>, <i>Mycoplasma</i> • Parasitic: schistosomiasis, toxoplasmosis
Traumatic
<ul style="list-style-type: none"> • Tears • Haematoma • Rhabdomyolysis
Inflammatory
<ul style="list-style-type: none"> • Polymyalgia rheumatica • Myositis • Dermatomyositis
Drugs
<ul style="list-style-type: none"> • Alcohol withdrawal • Statins • Triptans
Metabolic
<ul style="list-style-type: none"> • Hypothyroidism • Hyperthyroidism • Addison's disease • Vitamin D deficiency • Neuropathic

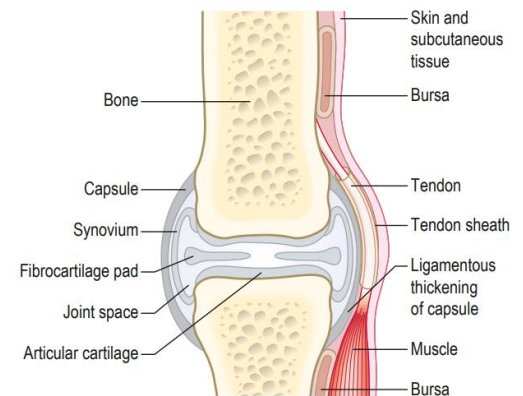


Fig. 13.1 Structure of a joint and surrounding tissues.

🧠 Neurological Pathologies That Alter Pain

Condition	Description
Diabetes, Leprosy, Syringomyelia, Syphilis	May impair joint sensation (Charcot joints)

💛 Joint Involvement – Patterns

Type	Definition
Monoarthritis	1 joint
Oligoarthritis	2–4 joints

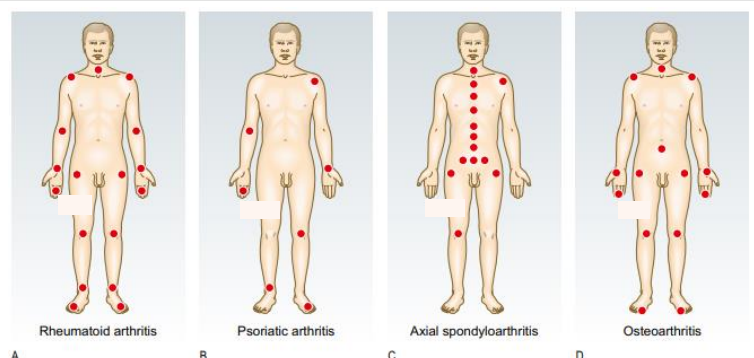


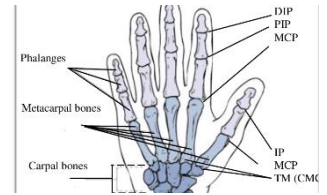
Fig. 13.3 Contrasting patterns of joint involvement in polyarthritis. [A] Rheumatoid arthritis (symmetrical, small and large joints, upper and lower limbs). [B] Psoriatic arthritis (asymmetrical, large > small joints, swelling of a whole digit – dactylitis, enthesitis). [C] Axial spondyloarthritis (spine and sacroiliac joints, asymmetrical peripheral arthritis, large > small joints, enthesitis). [D] Osteoarthritis (symmetrical, small and large joints, base of thumb, distal interphalangeal joints).

Polyarthritis

>4 joints

Notes:

- Hand/feet small joints → Inflammatory arthritis (e.g: SLE & RA)
- Medium/large joints → Degenerative or seronegative (such as psoriatic arthritis).
- DIP + CMC (thumb) → Nodal OA (check this extra pic to know names of hands joints) →→



Stiffness

- Ask: **Is movement restricted or painful?**
- Inflammatory: Morning stiffness >30 mins, improves with activity
- Mechanical: Stiffness after rest
- Polymyalgia Rheumatica: Shoulder & pelvic stiffness

Swelling Timing

Onset Time	Suggests
Rapid (30 mins)	Hemarthrosis*
Few hours up to two days (marked swelling)	Septic joint
Hours to days	Traumatic effusion

Note: Steroids and NSAIDs can mask symptoms.

- *Hemarthrosis :This occurs when vascular structures such as bone or ligament are injured and becomes worse in the presence of anticoagulants or bleeding disorders.
- Crystal-induced arthritis (gout or pseudogout) can mimic septic arthritis. It commonly starts overnight or early in the **morning** due to the rise in serum urate following the evening meal.

Erythema & Warmth

- Common in all types of arthritis
- **Infective, traumatic, crystal arthritis** → Erythema can occur
- **Mild erythema in inflammatory arthritis**
- **Erythematous DIP joints** → Psoriatic arthritis
- **Non-erythematous DIP joints with bony enlargement** → Heberden's nodes (osteoarthritis)

Pics of the book:

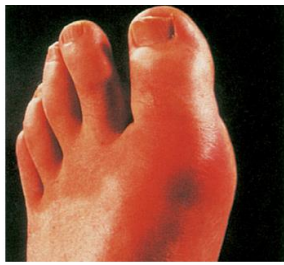


Fig. 13.2 Acute gout of the first metatarsophalangeal joint. This causes swelling, erythema, and extreme pain and tenderness (podagra). From Col-



Fig. 13.4 A Olecranon bursitis. B Right-knee haemarthrosis.

Weakness Categories

Disorder Type	Examples
Joint Disorders	Pain, disruption of the joint and its supporting structure
Nerve Disorders	Entrapment (e.g CTS = carpal tunnel syndrome at wrist)
Muscle Disorders	myositis, and with a rash, as in dermatomyositis. (widespread weakness associated with pain and fatigue)
Proximal Weakness	May relate to endocrine disorders, e.g. hypothyroidism or excess of glucocorticoids.

Locking & Triggering

- May indicate loose body or torn meniscus
- Patient can “unlock” the joint using specific maneuvers
- True locking is a block to the normal range of movement caused by mechanical obstruction (e.g. meniscus tear) , Pseudolocking is a loss of movement due to pain
- Triggering = fibrous thickening of flexor sheath
- Triggering Typically affects the **ring or middle fingers** in adults due to **nodular or fibrous thickening** of the **flexor sheath**, often from **low-grade trauma**, occupational overuse, or **inflammatory arthritis**. **Congenital triggering** usually affects the **thumb**.

Extra-articular Symptoms

I have collected info. mentioned in Macleod under this topic and organize it as a table :

Category	Symptoms / Features	Associated Conditions
Rashes	<ul style="list-style-type: none"> - Psoriasis - Vasculitis - Viral infections - Connective tissue diseases - Sarcoidosis - Autoinflammatory disease - Photosensitive rash (ask specifically) 	Psoriasis, SLE, vasculitis, connective tissue diseases, viral illness
Systemic Features	<ul style="list-style-type: none"> - Weight loss - Low-grade fever - Malaise 	RA, SLE

	- High-spiking fevers in the evening with rash(Still's diseaseمهم)	
Temporal Arteritis Clues	- Headache - Jaw claudication (pain on chewing) - Scalp tenderness	Temporal arteritis It was told in our lec that it's related to <u>Polymyalgia rheumatica</u> (PMR)
Connective Tissue Features	- Raynaud's phenomenon - Sicca symptoms (dry mouth, dry eyes) - Rashes - GI symptoms: dysphagia, mouth ulcers - Respiratory: dyspnoea, pleural pain/effusions	associated with rheumatoid arthritis or connective tissue disease
IBD-Associated Arthritis	- Back pain and stiffness - Arthritis - Abdominal pain - Diarrhoea - Bloody stools - Mouth ulcers	Inflammatory Bowel Disease (Crohn's, ulcerative colitis)

13.5 Extra-articular signs in rheumatic conditions	
Condition	Extra-articular signs
Rheumatoid arthritis	Rheumatoid nodules, palmar erythema, episcleritis, dry eyes, interstitial lung disease, pleural ± pericardial effusion, small-vessel vasculitis, Raynaud's phenomenon, low-grade fever, weight loss, lymphadenopathy, splenomegaly, leg ulcers
Psoriatic arthritis	Psoriasis, nail pitting, onycholysis, enthesitis, dactylitis, episcleritis
Reactive arthritis	Urethritis, mouth and/or genital ulcers, conjunctivitis, iritis, enthesitis (inflammation of tendon or ligament attachments) (e.g. Achilles enthesitis/plantar fasciitis, rash (keratoderma blennorrhagica))
Axial spondyloarthritis	Inflammatory bowel disease, psoriasis, enthesitis, iritis, episcleritis, aortic regurgitation, apical interstitial fibrosis
Septic arthritis	Fever, malaise, source of sepsis (e.g. skin, throat, gut)
Gout	Tophi, signs of renal failure or alcoholic liver disease, obesity
Sjögren's syndrome	'Dry eyes' (keratoconjunctivitis sicca), xerostomia (reduced or absent saliva production), salivary gland enlargement, Raynaud's phenomenon, neuropathy
Systemic lupus erythematosus	Photosensitive rash, especially on face, mucocutaneous ulcers, alopecia, fever, pleural ± pericardial effusion, diaphragmatic paralysis, pulmonary fibrosis (rare), Raynaud's phenomenon, lymphopenia
Systemic sclerosis	Skin tightening (scleroderma, see Fig. 3.30C), telangiectasia, Raynaud's phenomenon, calcific deposits in fingers, dilated nail-fold capillaries, pulmonary fibrosis
Vasculitis	Rash, fever, malaise, neuropathy, tender cranial arteries in giant cell arteritis, nasal crusting and saddle nose in granulomatous polyangiitis
Auto-inflammatory Diseases	Rash, recurrent fever, serositis, aphthous ulceration, hepatomegaly, splenomegaly, deafness
Other	Erythema nodosum of shins in sarcoidosis and Behçet's disease, viral rashes, drug rashes, oral and genital ulceration in Behçet's disease

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Medical History Considerations

- **Past Medical History:** Prev. attacks, diabetes, obesity
- **Drug History:** as in the table →→→→

imp to memorize this table

13.7 Drugs associated with adverse musculoskeletal effects	
Drug	Possible adverse musculoskeletal effects
Glucocorticoids	Osteoporosis, myopathy, osteonecrosis, infection
Statins	Myalgia, myositis, myopathy
Angiotensin-converting enzyme inhibitors	Myalgia, arthralgia, positive antinuclear antibody
Antiepileptics	Osteomalacia, arthralgia
Immunosuppressants	Infections
Quinolones	Tendinopathy, tendon rupture

Family History

Type	Example
First-degree	Inflammatory arthritis (more common if a first-degree relative is affected)
Polygenic Inheritance	OA, Osteoporosis, Gout
HLA-B27 association	Spondyloarthritis
Single gene defects	Marfan's, Ehlers-Danlos, hereditary sensorimotor neuropathy (Charcot–Marie–Tooth disease), osteogenesis imperfecta, muscular dystrophies

Social / Occupational / Environmental History

- Ask how condition affects daily life: washing, dressing, toileting
- Can they climb stairs?
- Assess need for aids or assistance in cooking, shopping
- Current job status: working, sick leave, benefits?
- Job risk due to condition?
- Consider **smoking**(risk factor for RA), **alcohol**(gout, myopathy, neuropathy and rhabdomyolysis), **ethnicity** (SCD, TB, Osteomalacia), **sexual history** (STDs)

from Macleod:

Sickle cell → bone/joint pain in African pts

Osteomalacia → Asian pts

TB → more common in African/Asian populations

Sexual hx. : risk for reactive arthritis, gonococcal arthritis, HIV infection and hepatitis B.

Past Papers Questions. .

#	Question	Answer	Brief Explanation *extra, just to enhance understanding*
1	Severe constant and diffuse low back pain, normal exam with diurnal variation	Fibromyalgia	Chronic pain with normal exam and diurnal variation suggests fibromyalgia.
2	26 y/o diabetic female: numbness in lateral two fingers, thenar wasting what's nerve defect&where	Median nerve at wrist (Carpal Tunnel Syndrome)	Thenar muscle wasting + sensory symptoms in 1st–3rd fingers = median nerve compression (CTS).
3	Morning DIP stiffness, worsens with activity, RA history	Osteoarthritis (OA)	DIP involvement and activity-related pain are typical of OA

4	Obese male, knee pain worsens after exercise, relieved by NSAIDs	Osteoarthritis	Mechanical joint pain, worse with exercise, typical for OA.
5	Morning stiffness, improves with movement, decreased lumbar mobility	Ankylosing spondylitis	Inflammatory back pain and stiffness improving with movement suggests AS.
6	Painful joint, erythema, redness, dialysis patient	Acute gout	Sudden joint pain with redness, esp. in renal patients, indicates gout.
7	Knee pain, urethritis, conjunctivitis	Reactive arthritis	Triad: arthritis, urethritis, conjunctivitis points to reactive arthritis.
8	43-year-old woman with dysphagia , ulcers on finger tips , and tight skin around mouth	Systemic sclerosis	triad of esophageal dysmotility (dysphagia) , digital ulcers , and tight, tethered skin is classic for systemic sclerosis
9	Acute knee pain, swelling, redness, fever	Septic arthritis	Hot, red, acutely painful joint with systemic signs = septic arthritis.
10	All are seronegative arthritis except:	RA	RA is not seronegative , unlike AS/PsA.
11	Fever, salmon rash, arthralgia in 14y/o	Still's disease	Classic Still's features: daily fever spikes + rash + arthritis.
12	Hemodialysis patient, elbow joint pain, red, painful	Acute gout	Dialysis increases uric acid → risk of gouty arthritis.
13	Post-UTI arthritis + conjunctivitis + eye symptoms	Reactive arthritis	Typical post-infectious triad: urethritis, arthritis, conjunctivitis.
14	Knee pain, fever, malaise	Septic arthritis	Systemic illness with acutely inflamed joint = septic joint.
15	Sudden toe pain, redness, swelling	Acute gouty attack	First MTP sudden severe pain = hallmark of gout.
16	Morning stiffness <10min, crepitus	Osteoarthritis	OA features brief stiffness and mechanical crepitus.

