Rheumatology
and
Orthopaedics
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CRASH COURSE
Second Edition

Rheumatology and Orthopaedics

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Preface

It has been estimated that musculoskeletal problems are responsible for one in four GP consultations. No matter what medical or surgical career you choose to follow, you are guaranteed to be exposed to patients with orthopaedic or rheumatological conditions. Despite this, teaching in these specialities can be neglected in the undergraduate curriculum.

As a medical student going home for Christmas you will be asked for an opinion on your mate’s injured knee, your auntie’s bunions and your father’s sciatica. (All these scenarios happened to us!) Hopefully this book will prepare you for these embarrassing situations!

The book is designed to give medical students a head start on the wards and make the exciting world of orthopaedics and rheumatology fun and easy to learn. It is also of use to foundation doctors (and will help pass your workplace based competency assessments!), physiotherapists, occupational therapists and nurses.

We hope you enjoy the book, pass your exams, and then follow a career in orthopaedics or rheumatology.

Daniel Marsland
Sabrina Kapoor
Annabel Coote
Paul Haslam

More than a decade has now passed since work began on the Crash Course series. Medicine never stands still, and the work of keeping this series relevant for today’s students is an ongoing process. This second edition builds upon the success of the preceding books and incorporates a great deal of new and revised material, keeping the series up to date with the latest medical research and developments in pharmacology and current best practice.

As always, we listen to feedback from the thousands of students who use Crash Course and have made further improvements to the layout and structure of the books. Each chapter now starts with a set of learning objectives, and the self-assessment sections have been enhanced and brought up to date with modern exam formats. We have also worked to integrate material on communication skills and gems of clinical wisdom from practising doctors. This will not only add to the interest of the text but will reinforce the principles being described.

Despite fully revising the books, we hold fast to the principles on which we first developed the series: Crash Course will always bring you all the information you need to revise in compact, manageable volumes that integrate pathology and therapeutics with best clinical practice. The books still maintain the balance between clarity and conciseness, while providing sufficient depth for those aiming at distinction. The authors are junior doctors who have recent experience of the exams you are now facing, and the accuracy of the material is checked by senior clinicians and faculty members from across the UK.

I wish you all the best for your future careers!

Dr Dan Horton-Szar
Series Editor
We thank:

The senior authors Annabel Coote and Paul Haslam.

Mr Stan Jones, consultant orthopaedic paediatric surgeon, Sheffield Children’s Hospital, for supplying the paediatric radiology images and helping with the cerebral palsy section.

Mr Richard Gibson, consultant orthopaedic surgeon, Northern General Hospital, Sheffield, for supplying some of the trauma images.

Andy Hamer and Michael Snaith, the Faculty Advisors for the first edition.

Dr Rodney Amos for his help with the section on juvenile idiopathic arthritis.

Dr David Moore, consultant radiologist, Northern General Hospital, Sheffield, for supplying many of the orthopaedic images.
Dedication

To the Marslands for their support throughout my education and to the Durani family and my new wife Priyanka.

DM

To Ash, Mum, Dad, Sanjay, Sandeep and grandma for their support and patience during the writing of this book.

SK

To Timothy and Magnus.

AC

To Audrey, Freddie, Mathew and Harry.

PH
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**Allodynia** A painful response to a stimulus that does not usually cause pain.

**Arthrodesis** Joint fusion surgery.

**Arthroplasty** Joint replacement surgery.

**Baker's cyst** Synovial cyst found in the popliteal fossa, usually associated with knee arthritis (osteoarthritis or rheumatoid arthritis).

**Bouchard's node** A bony swelling of the proximal interphalangeal joint caused by osteoarthritis.

**Boutonnière deformity** A deformity of the finger seen in rheumatoid arthritis, characterized by flexion of the proximal interphalangeal joint and hyperextension of the distal interphalangeal joint.

**Bursitis** Inflammation of a bursa.

**Cauda equina syndrome** Compression of the central nerve roots in the spinal canal causing bladder and bowel disturbance and saddle anaesthesia.

**Chondrocalcinosis** The presence of calcium pyrophosphate crystals in cartilage.

**Chondrosarcoma** Slow growing malignant tumour of cartilaginous origin.

**Codman's triangle** X-ray appearance when a bone tumour elevates the periosteum.

**Compartment syndrome** Increasing pressure within a myofascial compartment exceeds capillary pressure resulting in compromised circulation to muscles and nerves within the compartment.

**Crystal arthropathy** Includes a range of diseases of the joint resulting from crystal deposition including gout and chondrocalcinosis.

**Cytokine** Interacellular messenger protein.

**Dactylitis** Swelling of a whole digit in the hand or foot, commonly found in the spondyloarthopathies and sometimes referred to as a 'sausage digit'.

**Diaphysis** Shaft of a long bone.

**Developmental dysplasia of the hip (DDH)** Failure of the acetabulum to develop normally resulting in subluxation or dislocation of the femoral head.

**Dupuytren's contracture** Contracture of the palmar fascia results in fixed flexion of the digits (most commonly the ring finger).

**Enthesopathy** Degeneration/inflammation of a tendon or ligament where it inserts into bone.

**Epiphysis** Part of bone between the physis and the joint.

**Ewing's sarcoma** Malignant tumour of connective tissue origin in children and young adults, typically affecting proximal long bones and the pelvis.

**Flail chest** Occurs when two or more consecutive ribs are fractured in two or more places. This results in a mobile segment which moves paradoxically with respiration and causes impaired ventilation.

**Fracture** Break in the continuity in the cortex of normal bone.

**Ganglion** Cystic lesion associated with a joint or tendon.

**Glasgow Coma Score** Objective measure of consciousness based on best eye opening, verbal and motor responses.

**Haemarthrosis** Blood in a joint.

**Haemothorax** Blood in the pleural cavity.

**Hallux valgus** Correct term for bunion deformity.

**Heberden's node** A bony swelling of the distal interphalangeal joint caused by osteoarthritis.

**J sign** Seen with lateral maltracking of the patella.

**Keratoderma blenorrhagica** A pustular skin rash, usually confined to the palms and soles, associated with reactive arthritis.

**Kyphosis** Excessive forward curvature of the spine.

**Lachmann's test** Test for anterior cruciate ligament rupture.

**Lipoma** Benign adipose tissue.

**Livedo reticularis** A reticular, purplish discoloration usually seen on the extensor surfaces of the legs.
**Lymphoma** Primary malignant tumour of lymphoid tissue.

**Morton’s neuroma** Painful nerve lesion in the foot.

**Open fracture** A fracture associated with breach in the overlying epithelium and dermis allowing potential contamination of the fracture site with bacteria.

**Osgood–Schlatter disease** Traction apophysitis of the tibial tuberosity.

**Osteochondritis dissecans** Separation of subchondral bone and the overlying cartilage (usually affects the knee).

**Osteochondroma (exostosis)** Common benign bone tumour with a thick cartilagenous cap.

**Osteoid osteoma** Painful benign bone tumour which is self-limiting.

**Osteomyelitis** Infection within bone.

**Osteosarcoma** Aggressive malignant primary bone tumour.

**Pannus** Inflamed synovial tissue that erodes the articular cartilage in rheumatoid arthritis.

**Pathological fracture** Break in the continuity of the cortex of abnormal bone.

**Perthes disease** Segmental avascular necrosis of the femoral head.

**Pes planus** Flat foot.

**Phalen’s test** Holding the wrist in palmar flexion reproduces the symptoms of carpal tunnel syndrome.

**Physis** Growth plate of a bone.

**Pneumothorax** Air within the pleural cavity.

**Raynaud’s phenomenon** Pallor, coolness, numbness and discomfort of an extremity (commonly a digit) due to vasospasm.

**Red flag signs** Features of back pain that suggest sinister pathology.

**Rheumatoid factor** An antibody to the Fc fragment of immunoglobulin G (IgG) commonly found in rheumatoid arthritis.

**Rheumatoid nodules** Subcutaneous swellings occurring in patients with rheumatoid arthritis who test positive for rheumatoid factor.

**Sarcoma** Malignant neoplasm of connective tissue origin.

**Schirmer’s test** A test used to measure tear production in patients with dry eyes.

**Schöber test** A measurement of flexion at the lumbar spine.

**Sciatica** Pain radiating down the posterior aspect of the leg below the level of the knee.

**Sclerodactyly** Fibrotic thickening of the skin over the fingers seen in systemic sclerosis.

**Scoliosis** Lateral deviation of the spine.

**Shock** Inadequate tissue perfusion and oxygenation due to acute circulatory failure.

**Spinal claudication** Spinal stenosis compressing the spinal cord results in pain and numbness in the back and legs. It is relieved by sitting forward.

**Spinal shock** Results from spinal injury causing temporary total loss of function distal to the level of the injury (different from neurogenic shock).

**Spondylolisthesis** Forward displacement of one vertebra on another.

**Spondylolysis** A defect in the pars interarticularis. May result in a spondylolisthesis.

**Swan neck deformity** A deformity of the finger seen in rheumatoid arthritis, characterized by flexion of the metacarpophalangeal joint, hyperextension of the proximal interphalangeal joint and flexion of the distal interphalangeal joint.

**Synovitis** Inflammation of the synovium.

**Tarsal tunnel syndrome** Painful condition of the foot in which the posterior tibial nerve is compressed in the tarsal tunnel.

**Tenosynovitis** Inflammation of the synovial lining of a tendon sheath.

**Tension pneumothorax** A one-way valve develops in the lung surface. This allows air into the pleural cavity during inspiration but closes during expiration. This results in compression of the mediastinal structures and requires immediate decompression.

**Tinel’s test** Tapping over the median nerve in the wrist reproduces the symptoms of carpal tunnel syndrome.

**Thomas’ test** A test for fixed flexion deformity of the hip.
**Tophus**  A hard deposit composed of monosodium urate crystals occurring in or near the joints in chronic gout.

**Trendelenburg test**  A test for weak hip abductors.

**Valgus**  Angulation away from the midline.

**Varus**  Angulation towards the midline.

**Vasculitis**  Inflammation of the blood vessels.

**Yellow flag signs**  Psychosocial aspects of back pain associated with a poor outcome.