

SBAs for the FRCS(Tr&Orth) Examination

A Companion to Postgraduate Orthopaedics Candidate's Guide

Following the format change to include single best answer questions (SBAs), this book equips candidates with a full range of testing examples to develop familiarity with the format and prepare for success in their FRCS (Tr & Orth) examination. Containing over 1,000 level 2 SBA questions, detailed explanations ensure candidates understand the reasoning and evidence-based decision-making behind each answer. Covering the breadth of the orthopaedic syllabus, including more difficult subject areas such as biomechanics, prosthetics/orthotics, anatomy and statistics, this is a crucial resource for all candidates. Encouraging the integration of clinical information with problem solving, this question format help candidates learn and retain the answers more efficiently than with simple factual recall. Written by highly experienced clinicians and examiners, these example questions are essential for preparing for the real examination.

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Edited by Paul A. Banaszkiewicz, Kiran K. Singiseti
Frontmatter
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A Companion to Postgraduate
Orthopaedics Candidate's Guide

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Foreword

Any fool can know. The point is to understand.
– *Albert Einstein*

Once again, the team from Postgraduate Orthopaedics has produced a superbly written guide to the FRCS (Trauma and Orthopaedics) exam. For most orthopaedic trainees, this represents the pinnacle of their training, and passing the exam is validation that they are ready for consultancy. The authors have captured the essence of the exam, which is to demonstrate a deep understanding of the art and science of our speciality and not simply to recite memorised knowledge. The Single Best Answer section is a proven method of testing this, and the book educates the reader as to why it is so important. Questions are supported by

up-to-date evidence as well as defining where there are controversies.

Unique in this book are the chapters on tips for the exam as well as the mechanics on how the pass/fail decision is made. This will not only help readers understand the exam process but will also guide their preparation.

The Editor, Paul Banaszkiewicz, is internationally recognised for his courses, books and passion for training. He has led much of the progress with education for the British Orthopaedic Association and has assembled an exceptional team of authors.

Hiro Tanaka
Consultant Orthopaedic Surgeon
Chairman of the Education Committee BOA

Preface

The Part 1 or written MCQ paper is often seen as a poor relation to the more intense clinical and viva preparation needed for the Part 2 exam. The belief is that most candidates usually pass the Part 1 without too many difficulties. Occasionally a candidate will have to re-sit if they fall a bit short of the pass mark, but next time it should be plain sailing getting through.

There are very few quality Part 1 revision books available. Most have been written without due consideration to the high-stakes MCQ test paper criteria applied when constructing these questions. Single best answers are often confused with single correct answers.

It is no great shock, then, that on the real test day some candidates can end up surprised with the different standard, style and type of questions they come across.

There has been a move to replace old style level 1 factual recall questions with level 2 higher order thinking SBAs. This is a gradual process as it can sometimes take more than 10 hours of work to produce a good-quality SBA question with additional post-exam scrutiny to make sure the question really is achieving what it was set out to achieve.

This book is long overdue for the Postgraduate Orthopaedics book series. We were keen to maintain our own high standards and did not want to end up as some compromised book with patchy, simplistic level 1 recall question setting. The ambition was to include the vast majority of questions as level 2 higher order thinking and also provide an explanation of the correct answer that allowed for a fuller understanding of the topic and for critical thinking and discussion. We also wanted the SBA to be clinically relevant and important.

To write consistently good clinically based SBAs from scratch using an evidence-based approach with a quality explanatory answer was extremely difficult.

This was not expected or appreciated until the writing process was attempted. Some evenings no SBAs came forth whatsoever despite intense work. Thank goodness we had a few good evenings and weekends when a few high-quality new questions came together nicely. What we desperately wanted to avoid at all costs was an SBA level 1 factual recall submission. Even more important was to avoid rehashing a previously written level 1 SBA with just one or two words altered or a single option changed. This can happen more often than is acknowledged.

A massive additional challenge in writing this book was to maintain a consistently high standard across all the 27 chapters submitted and to deal with unexpected no-show chapters.

The EMI questions are being withdrawn, as they were too difficult to write and standardise. Although open to debate, they did not seem to be able to differentiate between good, average and poor candidates particularly well.

With the inherent difficulties involved trying to juggle a healthy work life balance for most trainees, Part 1 preparation is about revision in a businesslike manner with both efficiency and effectiveness – most importantly, making maximal use of the revision time available and minimising any unproductive revision sessions. A ready source of realistic, well-explained SBA questions that stimulate a thought-provoking process is surely something that should be aspired to.

As with all books in the Postgraduate Orthopaedics series, we make no claim for the originality of the material. We are just trying to distil down key orthopaedic knowledge from a wide variety of sources to better help trainees in their exam preparation. We are not trying to re-invent the wheel. Wherever possible we have attempted to credit our sources used. Please accept our sincere apologies if we have missed anyone out.

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Preface

We are very grateful to the question review teams who pre-tested some of the SBAs. This was a valuable learning exercise on both sides, with one of the few truly ‘win-win’ situations that we have come across in medicine.

If we have written a book that provides a more realistic idea of the type of questions that candidates

will face such that they approach their learning schedule in a more realistic and exam-savvy way, then we will have achieved most of what we set out to do

Paul Banasziewicz
Kiran K. Singiseti

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Special thanks to all the authors involved with the Postgraduate Orthopaedics book series over the years. Without your input, no books would be possible.

As always, thanks to Nicholas Dunton at Cambridge University Press for his help, guidance and strong support over the years.

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A very special thank-you to our new web designer Farrakh, who has helped us develop our website above and beyond the call of duty. We bombarded him with multiple different design requests and changes to plan and late-at-night WhatsApp queries that needed to be sorted out there and then.

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Abbreviations

1,2 ICSRA	1,2 intercompartmental suprapretinacular artery	AVN	avascular necrosis
A&E	Accident and Emergency	BAI	Basion–axial interval
AAI	atlantoaxial instability	BAPRAS	British Association of Plastic, Reconstructive and Aesthetic Surgeons
AAOS	American Academy of Orthopaedic Surgeons	BDI	Basion–dens interval
ABC	aneurysmal bone cyst	BKA	below-knee amputation
ABG	arterial blood gas	BMI	body mass index
ABI	ankle–brachial index	BMP	bone morphogenetic protein
ABPI	Ankle–Brachial Pressure Index	BMU	basic multicellular unit
AC	acromioclavicular	BOA	British Orthopaedic Association
ACDF	anterior cervical decompression and fusion	BOAST	British Orthopaedic Association Standards for Trauma
ACI	autologous chondrocyte implantation	BP	blood pressure
ACJ	acromioclavicular joint	BPTB	bone–patella–tendon–bone
ACL	anterior cruciate ligament	BSCOS	British Society for Children’s Orthopaedic Surgery
AD	autosomal dominant	BW	body weight
ADM	abductor digiti minimi	CC	costoclavicular
ADQ	abductor digiti quinti	CES	cauda equina syndrome
AF	annulus fibrosis	CES-C	cauda equina syndrome complete
AFO	ankle–foot orthosis	CES-I	cauda equina syndrome incomplete
AGP	aerosol-generating procedure	CES-R	cauda equina syndrome retention
AI	acetabular index	CES-S	cauda equina syndrome suspected
AIIS	anterior inferior iliac spine	CFL	calcaneofibular ligament
AIN	anterior interosseous nerve	CFU	colony-forming units
AIS	Abbreviated Injury Scale	CI	confidence interval
AIS	adolescent idiopathic scoliosis	CMC	carpometacarpal
AITFL	anterior–inferior tibiofibular ligament	CMCJ	carpometacarpal joint
ALIF	anterior lumbar interbody fusion	CML	classic metaphyseal lesion
ALL	anterior longitudinal ligament	CMT	congenital muscular torticollis
ALVAL	aseptic lymphocyte-dominated vasculitis-associated lesions	CoC	ceramic on ceramic
AM	anteromedial	CoCR	cobalt chrome
AMIC	autologous matrix-induced chondrogenesis	COPD	chronic obstructive pulmonary disease
ANOVA	analysis of variance	COR	centre of rotation
Anti-CCP	anti-cyclic citrullinated peptide	CP	cerebral palsy
AOFAS	American Orthopaedic Foot and Ankle Society	CPK	creatine phosphokinase
AP	anteroposterior	CR	cruciate retaining
APB	abductor pollicis brevis	CROW	Charcot restraint orthotic walker
APL	abductor pollicis longus	CRP	C-reactive protein
ARMD	adverse reactions to metal debris	CT	computed tomography
AS	ankylosing spondylitis	CTEV	congenital talipes equinovarus
ASIA	American Spinal Injury Association	CTLISO	cervical–thoracic–lumbar–sacral orthosis
ASIS	anterior superior iliac spine	DAA	direct anterior approach
ATFL	anterior talofibular ligament	DAIR	debridement, antibiotics and implant retention
ATLS®	Advanced Trauma Life Support®	DASH	Disabilities of the Arm, Shoulder and Hand
ATP	adenosine triphosphate	DASS	Depression Anxiety Stress Scales

List of Abbreviations

DBB	Denis Browne boots and bar	HEPA	high-efficiency particulate air
DCO	damage control orthopaedics	HIV	human immunodeficiency virus
DCP	dynamic compression plate	HO	heterotopic ossification
DDH	developmental dysplasia of the hip	HOTS	Higher Order Thinking Skills
DE	distractor efficiency	HPAA	hypothalamic-pituitary-adrenal axis
DEXA	dual energy x-ray absorptiometry	HS	hamstring
DGH	district general hospital	HTO	high tibial osteotomy
DHS	dynamic hip screw	HXLPE	highly cross-linked polyethylene
DI	discrimination index	ICB	Intercollegiate Board
DIF I	difficulty index	ICSRA	intercompartmental suprapretinacular artery
DIP	distal interphalangeal	IFSSH	International Federation of Societies for Surgery of the Hand
DIPJ	distal interphalangeal joint	IHDI	International Hip Dysplasia Institute
DISI	dorsal intercalated segmental instability	II	image intensifier
DRUJ	distal radioulnar joint	IKDC	International Knee Documentation Committee
DVT	deep vein thrombosis	IL	interleukin
EAC	Early Appropriate Care	IM	intramedullary
ECRB	extensor carpi radialis brevis	IOL	interosseous ligament
ECRL	extensor carpi radialis longus	IOPFF	intraoperative periprosthetic femoral fractures
ECU	extensor carpi ulnaris	IP	interphalangeal
EDC	extensor digitorum communis	IPJ	interphalangeal joint
EDU	extensor carpi ulnaris	IQR	interquartile range
EIP	extensor indicis proprius	ISS	Injury Severity Score
EMG	electromyography	ITB	iliotibial band
EMIs	extended matching items	ITOH	idiopathic transient osteoporosis of the hip
EPB	extensor pollicis brevis	ITT	intention to treat
EPL	extensor pollicis longus	ITU	Intensive Care Unit
ER	external rotation	IV	intravenous
ESIN	elastic stable intramedullary nailing	JBJS	Journal of Bone and Joint Surgery
ESR	erythrocyte sedimentation rate	JCIE	Joint Committee on Intercollegiate Examinations
FAI	femoral acetabular impingement	KOOS	Knee Injury and Osteoarthritis Outcomes Score
FBC	full blood count	LABC	lateral antebrachial cutaneous
FCR	flexor carpi radialis	LCH	Langerhans cells histiocytosis
FCU	flexor carpi ulnaris	LCL	lateral collateral ligament
FDG	fluorodeoxyglucose	LCP	low compression plates
FDL	flexor digitorum longus	LCPD	Legg–Calvé–Perthes disease
FDP	flexor digitorum profundus	LIPUS	low intensity pulsed ultrasound
FDS	flexor digitorum superficialis	LLD	limb length discrepancy
FFP	fresh frozen plasma	LMWH	low molecular weight heparin
FGF	fibroblast growth factor	LOTS	Lower Order Thinking Skills
FGF23	fibroblast growth factor 23	LT	lunotriquetral
FGFR3	fibroblast growth factor receptor gene 3	LUCL	lateral ulnar collateral ligament
FHC	femoral head coverage	MARS	metal artefact reduction sequence
FHL	flexor hallucis longus	MCID	minimal clinically important difference
FOP	fibrodysplasia ossificans progressiva	MCL	medial collateral ligament
FPL	flexor pollicis longus	MCP	metacarpophalangeal
FPP	functional pelvic plane	MCPJ	metacarpophalangeal joint
GA	general anaesthetic	MCQs	multiple choice questions
GCS	Glasgow Coma Score	MCSF	macrophage-colony stimulating factor
GCT	giant cell tumour	MDT	multidisciplinary team
GLAD	glenolabral articular disruption	MFCA	medial femoral circumflex artery
GMC	General Medical Council	MFL	meniscomfemoral ligament
GMFCS	Gross Motor Function Classification System	MHRA	Medicines and Healthcare products Regulatory Agency
GPa	gigaPascal	MI	migration index
GT	greater trochanter		
GTN	glycerl trinitrate		
HA	hyaluronic acid		
HA	hydroxyapatite		
HAGL	humeral avulsion of the glenohumeral ligament		

List of Abbreviations

MIS	minimally invasive surgical	PLC	posterolateral corner
MMP	metalloproteinase	PLI	posterolateral instability
MOXFQ	Manchester–Oxford Foot Questionnaire	PLIF	posterior interbody lumbar fusion
MPFL	medial patellofemoral ligament	PLRI	posterolateral rotatory instability
MR	magnetic resonance	PMC	posteromedial corner
MRA	magnetic resonance arthrography	PMMA	polymethylmethacrylate
MRC	Medical Research Council	PMN	polymorphonuclear neutrophil
MRI	magnetic resonance imaging	PMT	phosphaturic mesenchymal tumour
MSC	mesenchymal stem cell	POSI	position of safe immobilisation
MTP	metatarsophalangeal	PPE	personal protective equipment
MTPJ	metatarsophalangeal joint	PROM	patient-reported outcome measure
MUA	manipulation under anaesthesia	PRP	platelet-rich plasma
NAI	non-accidental injury	PS	posterior stabilised
NBME	National Board of Medical Examiners	PSA	prostate-specific antigen
NCT	nerve conduction test	PT	pronator teres
NF	neurofibromatosis	PTH	parathyroid hormone
NF-1	neurofibromatosis type 1	PTHrP	parathyroid hormone-related protein
NF-2	neurofibromatosis type 2	PTTD	posterior tibial tendon dysfunction
NFD	non-functional distractors	PVNS	pigmented villonodular synovitis
NICE	National Institute for Health and Clinical Excellence	RANK	receptor activator of nuclear factor κ B
NNH	number needed to harm	RANKL	receptor activator of nuclear factor κ B ligand
NNT	number needed to treat	RCT	randomised controlled trial
NOF	neck of femur	RF	rheumatoid factor
NSAIDs	non-steroidal anti-inflammatory drugs	ROC	receiver operating characteristic
NTN	National Training Number	ROM	range of movement
OA	osteoarthritis	RR	relative risk
OATS	osteochondral autograft transfer system	RR	risk ratio
OCd	occipitocervical dissociation	RSA	reverse shoulder arthroplasty
OCd	osteochondritis dessicans	RTA	road traffic accident
ODEP	Orthopaedic Data Evaluation Panel	RVAD	rib vertebral angle difference
OI	obturator internus	SACH	solid ankle cushioned heel
OITE	Orthopaedic In-Training Exam	SBA	single best answer
OMT	Oberg, Manske and Tonkin	SCALE	Selective Control Assessment of the Lower Extremity
ON	osteonecrosis	SCD	sickle cell disease
OPLL	ossification of the posterior longitudinal ligament	SCFE	slipped capital femoral epiphysis
OR	odds ratio	SCIWORA	spinal cord injuries without radiographic abnormalities
ORIF	open reduction internal fixation	SCR	superior capsular reconstruction
PA	posterior anterior	SD	standard deviation
PADI	posterior atlantodental interval	SDR	selective dorsal rhizotomy
PCL	posterior cruciate ligament	SEM	Standard Error of Measurement
PDGF	platelet-derived growth factor	SF-36	Short Form (36) Health Survey
PE	polyethylene	SI	sacroiliac
PE	pulmonary embolism	SIJ	sacroiliac joint involvement
PEP	post-exposure prophylaxis	SL	scapholunate
PET	positron emission tomography	SLAC	scapholunate advanced collapsed
PFJ	patellofemoral joint	SLAP	superior labrum from anterior to posterior
PFVO	proximal femoral varus osteotomy	SLE	systemic lupus erythematosus
PGE2	prostaglandin E2	SLL	scapholunate ligament
PI	pelvic incidence	SLR	straight leg raise
PIN	posterior interosseous nerve	SMA	second moment area
PIP	proximal interphalangeal	SMC	selective motor control
PIPJ	proximal interphalangeal joint	SME	subject matter expert
PITFL	posterior-inferior tibiofibular ligament	SNAC	scaphoid non-union advanced collapsed
PJI	periprosthetic joint infection	SNAP	sensory nerve action potential
PL	palmaris longus	SONK	spontaneous osteonecrosis of the knee
PL	posterolateral		
PLC	posterior ligamentous complex		

List of Abbreviations

SPECT	single photon emission computed tomography	TMT	tarsometatarsal
SPT	spinopelvic tilt	TMTJ	tarsometatarsal joint
SRN	superficial radial nerve	TNF	tumour necrosis factor
SS	sacral slope	TNSALP	tissue-nonspecific isoenzyme of alkaline phosphatase
ST3	specialist training year 3	TPD	Training Program Director
STT	scaphotrapeziotrapezoid	TSA	total shoulder arthroplasty
SUFE	slipped upper femoral epiphysis	TSR	total shoulder replacement
SUV	standardised uptake value	TT	tibial tubercle
SVA	sagittal vertical axis	TT-TG	tibial tuberosity–trochlear groove
T&O	Trauma and Orthopaedics	UCL	ulnar collateral ligament
TB	tuberculosis	UHMWPE	ultra-high-molecular-weight polyethylene
TEG	thromboelastography	UKA	unicompartmental knee arthroplasty
TENS	transcutaneous electrical nerve stimulation	UKITE	United Kingdom In-Training Examination
TER	total elbow replacement	UMN	upper motor neuron
TF	transfemoral	US	ultrasound
TFCC	triangular fibrocartilage complex	VACTERL	vertebral, anorectal, cardiac, tracheal, oesophageal, renal and limb
TGCT	tenosynovial giant cell tumour	VAS	visual analogue scale
THA	total hip arthroplasty	VDRO	varus derotation osteotomy of the femur
THR	total hip replacement	VISA-A	Victorian Institute of Sport Assessment-Achilles Questionnaire
Ti	titanium	VISI	volar intercalated segmental instability
TIMP	tissue inhibitory metalloproteinase	VTE	venous thromboembolism
TKA	total knee arthroplasty	WBA	workplace-based assessments
TKR	total knee replacement	WBC	white blood cell
TLICS	Thoracolumbar Injury Classification and Severity	WCC	white blood cell count
TLSO	thoracolumbar spinal orthosis	XLHR	X-linked hypophosphataemic rickets
TLSO	thoracolumbosacral orthosis	ZPA	zone of polarising activity
TM	trabecular metal		

Interactive Website

The website to accompany the books

www.postgraduateorthopaedics.co.uk

This website accompanies the textbook series: Postgraduate Orthopaedics. It includes:

- Postgraduate Orthopaedics: The Candidates Guide to the FRCS (Tr & Orth) Examination, third edition
- Postgraduate Orthopaedics: Viva Guide for the FRCS (Tr & Orth) Examination, second edition
- Postgraduate Paediatric Orthopaedics

The aim is to provide additional information and resources in order to maximise the learning potential each book.

Additional areas of the website provide supplementary orthopaedic material, updates and web links. *Meet the editorial team* provides a profile of authors who were involved in writing the books.

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