Orthopaedic Surgery
Residency

TRAINING REQUIREMENTS

(A) INTRODUCTION

The goal of the Orthopedic Surgery Residency Program is to provide training in all aspects of Orthopaedics with broad exposure to education that makes the finished resident an independent general Orthopaedic surgeon with surgical competency in general Orthopaedic procedures. The residency will also offer a secure foundation for those who may choose to pursue a subspecialty.

The residents in our program will experience a curriculum that emphasizes all core areas of medical education, which are patient care, medical knowledge and practice-based learning and improvement.

The total duration of Orthopaedic Surgery residency training is 6 years (R1 – R6). Completion of Housemanship is required for entry into Orthopaedic residency.

(B) PROGRAMME OVERVIEW

With effect from July 2016, R1 to R5 are accredited by ACGME-I while R6 is accredited by JCST.

(C) TRAINING REQUIREMENTS R1

1. ACGME-I Foundational Requirements

The R1 year must be in compliance with ACGME-I's Foundational Requirements.

Foundational requirements for all specialties may be located at the following website: http://www.acgme-i.org/web/requirements/internationalfoundational.pdf

2. Specialty Specific Requirements

I. Compulsory postings and rotation

Residents are required to complete the following stipulated postings in R1:

- 3 months of Anaesthesia (including 2 weeks of Intensive Care)
- 3 months of Emergency Medicine
- 6 months of General Surgery

II. Compulsory Courses

Residents are required to complete the below list of compulsory courses within a year before or after the recommended year of completion.

Recommended year of completion	Compulsory courses
R1	• Suturing • Plaster Application • Traction

	• X-ray Reading Course • Basic Communication Skills • Evidence Based Medicine • Advanced Trauma Life Support Course (ATLS)

Note: Please refer to section F (III) for the Requirements on Compulsory Courses.

3. Resident Competencies

	R1
Patient Care	Able to investigate and evaluate patient care practices and appraise and assimilate scientific evidence to improve patient care practices. Residents will be given increasing responsibility for care of patients under faculty supervision.
Medical Knowledge	Demonstrate medical knowledge in the field of Anaesthesia, Emergency Medicine and General Surgery appropriate to the level of training and be able to apply this knowledge to patient care. Residents are expected to assume responsibility for teaching and supervising other residents and medical students.
Practice-based Learning and Improvement	Show compassionate, appropriate and effective medical care for their patients.
Interpersonal and Communication Skills	Demonstrate interpersonal and communication skills that result in effective information exchange with patients, their families and professional associates.
Professionalism	Demonstrate a commitment to carrying out professional responsibilities, adhere to ethical principles and be sensitive to a diverse patient population.
Systems-based Practice	Demonstrate an awareness of and responsiveness to the health care system and an ability to effectively call on system resources to provide care that is of optimal value.

Please refer to Section (F) for more information on the scholarly activities and requirements on compulsory courses which are applicable to R1.

(D) TRAINING REQUIREMENTS R2 – R5

ACGME-I's advanced specialty requirements can be found here: http://www.acgme-i.org/web/requirements/specialtypr.html

I. Clinical / Operative Experience

Residents are required to attain a minimum log of 200 surgical cases as a surgeon or 1st assistant per year and 750 outpatient cases per year.

In the ACGME-I accredited year R2 to R5 and JCST accredited year R6, the residents must perform at least 25 cases as 1st surgeon supervised per year out of the 200 cases per year. The complexity and number of the cases as surgeon should be increasing as the resident advances in training.

For resident to be logged as first surgeon, he/she should perform 75% of the surgery either independently or supervised depending on the level and skill of the resident. 1st assistant must be involved in planning, positioning and review of the patient pre and post-operation.

Residents are required to attain the following mandatory minimum number of procedures by the end of residency training.

Procedures	Minimum number	To be achieved by	Level of Competency
Fixation of paediatric elbow fractures	5	R5	First Assistant
Carpal tunnel release	10	R5	First Assistant
Hip fractures fixation	30	R6	Surgeon
Total knee arthroplasty (TKA)	30	R6	Surgeon
Knee arthroscopy	30	R6	Surgeon
ACL reconstruction	10	R6	First Assistant
Operative treatment of femoral and tibial shaft fractures	25	R6	Surgeon
Ankle fracture fixation	15	R6	Surgeon
Spine decompression / posterior spine fusion	15	R6	First Assistant
All oncology procedures	10	R5	First Assistant
Shoulder arthroscopy	15	R6	First Assistant
Radius and ulna fixation	20	R6	Surgeon
Hip arthroplastv (include total and bipolar)	20	R6	Surgeon
Foot and ankle reconstructive procedures	15	R6	First Assistant
All other emergency and elective paediatric procedures	25	R5	First Assistant
Total All Cases	A minimum of 200 surgical cases as a surgeon or 1st assistant per year from R2 to R6 and a minimum of 1,000 cases for those 5 years has already been stipulated in the training requirements		

II. Postings and rotations

R2 to R6 must include at least 5 years of rotation in Orthopaedic services. Residents are required to complete the minimum duration of subspecialty rotations from R2 to R6 as follows:

- At least 6 months of General Orthopaedics and Trauma
- At least 3 months of Hand Surgery
- At least 3 months of sports related surgery including arthroscopy and arthroscopic reconstruction
- At least 3 months of Paediatric Orthopaedic Surgery
- At least 3 months of adult reconstructive surgery including arthroplasty and foot and ankle surgery
- At least 3 months of musculoskeletal oncology
- At least 3 months of spinal surgery

III. Compulsory Courses

Residents are required to complete the below list of compulsory courses within a year before or after the recommended year of completion.

Recommended year of completion	Compulsory courses
R2	• Basic Fracture Fixation Course • Biomechanics Course
R3	Nil
R4	Nil
R5	SMA Ethics Course
R1 to R6 (with effect from July 2019 intake)	• Knee Arthroscopy Course • Hip & Knee (AR) Course • Shoulder Arthroscopy Course • Spine Course

Note: Please refer to section F (III) for the Requirements on Compulsory Courses.

IV. Residents' competencies

Please refer to the ACGME-I advanced specialty requirements for the expected residents' competencies from R2 to R5.

Please refer to Section (F) for more information on the didactic sessions, scholarly activities and requirements on compulsory courses which are also applicable to the ACGME-I years R2 to R5.

(E) TRAINING REQUIREMENTS R6

1. ACGME-I Foundational Requirements

The R6 years must be in compliance with ACGME-I's Foundational Requirements.

Foundational requirements for all specialties may be located at the following website: http://www.acgme-i.org/web/requirements/internationalfoundational.pdf

2. Specialty Specific Requirements

I. Clinical and/or Operative Experience

Please refer to Section (D.I) for information on the clinical and/or operative experience in R6.

II. Compulsory postings and rotations

R6 can be a research and elective year. The first 6 months of R6 can be utilized to complete compulsory postings of R2-R5 or elective postings of their choice. The remaining 6 months can be used for elective posting or research. R6 residents should only undertake full-time research posting if they are able to fulfil the minimum clinical and operative experience as stipulated in Section (D.I) and fulfil the requirements for exit examination. Programme Directors may arrange cross-SI rotations for their residents in R6. Please refer to Section (D.II) for more information on the compulsory postings and rotations in R6.

III. Compulsory Courses

Residents are required to complete the following compulsory course within a year before or after the recommended year of completion.

Recommended year of completion	Compulsory course
R6	Postgraduate Course in Orthopaedics

3. Resident Competencies

	R6
Patient Care	1. Demonstrates comprehensive assessment to reach appropriate diagnosis and recommends appropriate diagnostic steps/consults when necessary 2. Able to recommend appropriate further investigations and / or consults if necessary 3. Carries out safe and rational surgeries to ensure a good outcome for the patient after proper patient selection. 4. Responds appropriately to changes in Orthopaedic disease processes and emergency clinical problems 5. Prescribes appropriate post-surgery care 6. Able to be consulted on and provide sound opinions on management of Orthopaedics patients 7. Places staff and patients' welfare and safety first and foremost 8. Able to assess the situation and practice within the scope of own ability. Faculty should be consulted when confronted with high-risk situations that exceed resident's confidence or skill to handle alone. 9. Always duty bound to patient care 10. Functions as an effective member of a team.
Medical Knowledge	1. Comprehensive and up-to-date knowledge of Orthopaedics principles and practice 2. Application of appropriate pathology and anatomy to clinical decision making 3. Sound background of relevant surgical and medical disease states and to refer to the appropriate disciplines for preoperative patient optimization 4. Understanding of patient co-morbidities 5. Knowledge relevant to postoperative care. 6. Demonstrates good analytical approach and problem solving techniques.
Practice-based Learning and Improvement	1. Analyzes own practice and self-corrects with input from faculty 2. Investigates patient care issues through discussions with faculty or research on latest literature 3. Understands scientific study design and uses IT to gather information relevant to patient and practical decision-making 4. Critically evaluates scientific literature on topics pertaining to the practice of Orthopaedics 5. Assimilates into clinical practice new advances upheld by current peer-reviewed literature 6. Facilitates learning of others and provides candid and constructive feedback on the performance of colleagues 7. Systematically analyzes practice using quality improvement methods and participates in quality improvement projects. 8. Demonstrates self-motivated lifelong learning and self-improvement 9. Applies evidence-based medicine into clinical care. He/she must be involved in audit processes e.g. morbidity and mortality sessions.

	R6
Interpersonal and Communication Skills	1. Listens effectively, allows patients/ families to ask questions and is attentive to their concerns 2. Leader in the health care team by being appropriately assertive and decisive Teambuilding when opportunity arises 3. Explains procedures and Orthopaedics plans appropriately for patient consent by providing enough information; checks for patient understanding, and does not use overly technical language 4. Establishes rapport with patient using empathy 5. Effectively communicates with other members of the health care team e.g. nurses, physiotherapist and occupational therapists and the rehabilitation physicians.
Professionalism	1. Accepts responsibility and is appropriately self-confident 2. Follows through and complete tasks carefully and thoroughly 3. Responds sensitively to patient's unique characteristics and needs 4. Respectful, courteous and compassionate towards patients and their families and towards colleagues 5. Adheres to professional ethics, integrity and respects patient privacy and autonomy 6. Is an appropriate role model to juniors and ancillary staff
Systems-based Practice	1. Acts to deliver Orthopaedics services efficiently without compromising patient care/ safety 2. Able to call on system resources (e.g. hospital IT, consultants, nurses, protocols) and other providers to optimize care 2. Provides cost-conscious Orthopaedics care. 3. Identifies system causes of near-misses and medical errors and seeks to improve it and promote patient safety 4. Functions effectively in a larger complex healthcare system 5. Demonstrates awareness and responsiveness to healthcare in general such as understanding multidisciplinary care and functioning as a team.

(F) OTHER TRAINING REQUIREMENTS

I. Didactic sessions (R2-R6)

Residents who entered Residency training prior to July 2016 are required to meet the minimum attendance of at least 75% at the Singapore Orthopaedic Association (SOA) teaching sessions.

Residents who entered Residency training with effect from July 2016 are required to meet the following minimum attendance at the SOA:

- R1 : attendance will be optional
- R2 to R4 : minimum of 50% attendance
- R5 to R6: minimum of 75% attendance

II. Scholarly activities (R1-R6)

Over the whole duration of Orthopaedic Surgery residency training, residents are required to make at least 2 oral presentations at the Singapore Orthopaedic Association (SOA) Annual Scientific Meeting (ASM) and/or at international recognized conferences. The 2 oral presentations should not be for the same paper/study.

Please refer to Annex A for the list of international conferences which are recognized.

III. Requirements on Compulsory Courses (R6)

The RAC has stipulated the following requirements with regard to the completion of courses:

1. Residents are required to complete all compulsory courses from R1 to R6.
2. Residents need not re-attend the course if he/she has already attended prior to the commencement of residency.
3. Residents with a valid ATLS cert at the beginning of R2 need not re-attend the course.

(G) LOG OF OPERATIVE / CLINICAL EXPERIENCE

All residents must to keep a log of their operative / clinical experience in the ADS for R2 to R5. It will be optional for R1 to log cases in the ADS. R6 must keep a log of their operative / clinical experience in the electronic logging system.

(H) ASSESSMENT AND EXAMINATIONS

I. Supervisors Assessment

The supervisor's evaluation of the resident should be performed at the end of every rotation using the designated form and a summary submitted to the RAC for review.

II. Feedback

The RAC would organise town hall sessions with the residents to seek feedback on the training programme.

III. Formative Assessments and Intermediate Examinations

Programme Directors may use more than one of the following assessment tools to evaluate the resident's performance:

1. Resident Competency Evaluation Form (Global Assessment)
2. 360-Degree Evaluation Form/ Multisource feedback (by peers and nursing officers)
3. MOHH Common Trainee /Resident Evaluation Form
4. Semi-Annual Evaluation Form
5. Patient Survey Form
6. Direct Observation of Procedural Skills in Orthopaedics (O-DOPS) / Assessment for Surgical Procedures
7. Mini-CEX
8. Ward evaluation
9. Peer Appraisal
10. Viva

The table below shows a list of compulsory formative and intermediate examinations that residents have to take in each year of training.

Residency Year	Examinations
R1	MRCS
R2	OITE (Orthopaedic In-Training Examination)
R3	M.Med (Orthopaedic Surgery) Examination OITE
R4	OITE
R5	OITE
R6	OITE

(I) CHANGES IN TRAINEESHIP PERIOD AND LEAVE OF ABSENCE

I. Changes in Training Period

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC may at its discretion, require the resident to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All residents are required to conform to the residency training plan as approved by the RAC and complete all the exit and training requirements within the maximum candidature.

II. Leave Of Absence

All residents are to comply with the prevailing MOH policy on Leave of Absence.

III. Overseas Postings

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (refer to JCST Circular 114/14).

List of international conferences which are recognized

S/N	Category	Name of Conference
1	Adult Reconstruction Conferences	AAHKS ASM (American Association of Hip and Knee Surgeons)
2	Adult Reconstruction Conferences	International Symposium Knee Arthroplasty
3	Adult Reconstruction Conferences	ISTA (International Society for Technology in Arthroplasty)
4	Adult Reconstruction Conferences	World Arthroplasty Congress by European Knee Society
5	Cartilage	International Cartilage Repair Society (ICRS) Congress & Meetings
6	Cartilage	Asia-Pacific Knee, Arthroscopy and Sports Medicine Society (APKASS) Congress & Meetings
7	Foot and Ankle Conferences	American Foot and Ankle Society Annual Meeting (AOFAS)
8	Foot and Ankle Conferences	International Federation of Foot and Ankle Societies (IFFAS) Scientific Meeting
9	Foot and Ankle Conferences	European Foot and Ankle Society (EFAS) Congress
10	Foot and Ankle Conferences	British Orthopaedic Foot and Ankle Society (BOFAS) Annual Meeting
11	Foot and Ankle Conferences	Asian Federation of Foot and Ankle Surgeons (AFFAS) Scientific Meeting
12	Foot and Ankle Conferences	European Orthopaedic Research Society (EORS) Annual Meeting
13	Foot and Ankle Conferences	Australian Foot & Ankle Society (also called AOFAS)
14	General Conferences	EFORT Congress
15	General Conferences	SICOT Congress
16	General Conferences	AAOS Annual Meeting
17	General Conferences	APOA Scientific Meeting
18	General Conferences	AOA ASM (Australian Orthopaedic Association)
19	General Conferences	Combined Orthopaedic Associations Congress Meeting
20	General Conferences	Orthopaedic Research Society Meeting (American)
21	General Conferences	International Combined Orthopaedic Research Society (ICORS) Meeting
22	General Conferences	SOA ASM (Singapore Orthopaedic Association)
23	General Conferences	ASEAN Orthopaedic Association
24	Hand Surgery Conferences	Asia-Pacific Federation for Societies of Surgery of the Hand (APFSSH) meeting
25	Hand Surgery Conferences	Asia-Pacific Wrist Association (APWA) meeting
26	Hand Surgery Conferences	Federation of European Societies of Surgery of the Hand (FESSH) meeting
27	Hand Surgery Conferences	International Federation of Societies of Surgery of the Hand (IFSSH) meeting
28	Hand Surgery Conferences	American Society of Surgery of the Hand (ASSH) meeting

29	Hand Surgery Conferences	American Association of Hand Surgery (AAHS) meeting
30	Hand Surgery Conferences	British Society of Surgery of the Hand (BSSH) meeting
31	Paeds Ortho Conferences	Paediatric Orthopaedic Society of North America (POSNA) Annual Meeting
32	Paeds Ortho Conferences	European Paediatric Orthopaedic Society (EPOS) Annual Meeting
33	Paeds Ortho Conferences	International Federation of Paediatric Orthopaedic (IFPOS) Congress
34	Paeds Ortho Conferences	Asia Pacific Paediatric Orthopaedic Society (APOA Paeds) Meetings
35	Spine Conferences	Global Spine Congress
36	Spine Conferences	Eurospine Conference
37	Spine Conferences	North American Spine Society Annual Meeting (NASS)
38	Spine Conferences	International Meeting on Advanced Spinal Techniques (IMAST)
39	Spine Conferences	Scoliosis Research Society Annual Meeting (SRS)
40	Spine Conferences	Asia Pacific Spine Society Meeting (APSS)
41	Spine Conferences	Spine Society of Australia Annual Meeting
42	Sports Surgery Conferences	International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine (ISAKOS) Congress
43	Sports Surgery Conferences	International Congress of Shoulder & Elbow Surgery (ICSES)
44	Sports Surgery Conferences	European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE) Congress
45	Sports Surgery Conferences	Academic Congress of Asian Shoulder Association (ACASA)
46	Sports Surgery Conferences	European Society of Sports Traumatology, Knee Surgery & Arthroscopy (ESSKA) Congress
47	Sports Surgery Conferences	World Congress of the International Cartilage Repair Society (ICRS)
48	Sports Surgery Conferences	Asia-Pacific Knee, Arthroscopy and Sports Medicine Society (APKASS) Congress
49	Sports Surgery Conferences	Annual meeting of the American Orthopaedic Society for Sports Medicine (AOSSM)
50	Sports Surgery Conferences	Annual meeting of the Arthroscopy Association of North America (AANA)
51	Trauma Conferences	Orthopaedic Trauma Association (OTA) Annual Meeting
52	Trauma Conferences	AOTrauma Asia Pacific Research Congress
53	Trauma Conferences	Fracture Fragility Network (FFN) Congress
54	Trauma Conferences	ASAMI-ILLRS World Congress
55	Tumor Surgery Conferences	International Society of Limb Salvage General Meeting
56	Tumor Surgery Conferences	Musculoskeletal Tumor Society Meeting
57	Tumor Surgery Conferences	Asia Pacific Musculoskeletal Society Meeting