Specialty Training Requirements (STR)

Name of Specialty:	Sports Medicine
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Scope of Sport Medicine

Sports Medicine encompasses Sport and Exercise Medicine, as well as the Sport and Exercise Sciences (Exercise Physiology, Strength & Conditioning, Sports Nutrition, Sports Biomechanics, and Sports Psychology).

Sport and Exercise Medicine Physicians need to be familiar with a wide variety of sports and related physical activities (e.g. performing arts, military activities). The exercising population that the Sport and Exercise Medicine Physician deals with is not a homogenous one – it ranges from elite and professional athletes to recreational athletes, children, women, elderly, and the disabled. Sport and Exercise Medicine Physicians deal not only with the injured, but also with healthy athletes seeking performance enhancement and clinical populations requiring exercise testing and exercise prescription.

Purpose of the Residency Programme

The purpose of the programme is to produce Sport and Exercise Medicine Physicians who:

a) Are clinically competent in the diagnosis and management of sport and exercise injuries and sport and exercise medical related medical conditions in a tertiary care setting;

b) Are clinically competent in fulfilling the duties of a Team Physician, including preparticipation screening, event medical coverage, doping control and counselling, early management of sports injuries, and sport and exercise related medical conditions in a primary care setting;

c) Are proficient in exercise testing and prescription in both diseased and disease-free populations;

d) Possess habits of life-long learning to build upon their knowledge and skills;

e) Are proficient in applying the principles of Sport and Exercise Sciences (i.e. Exercise Physiology, Strength and Conditioning, Sports Nutrition, Sports Biomechanics, Sports Psychology) in the management of competitive and recreational athletes;

f) Are fairly familiar with a wide variety of sports;

g) Foster professional and healthy interactions within the multidisciplinary team supporting the athlete, including coaches, sports administrators, sport scientists, paramedical professionals (e.g. sports physiotherapists, podiatrists, sports trainers), and medical colleagues from other disciplines (e.g. sports orthopaedic surgeons); and

h) Are proficient in conducting applied research in the fields of Sport and Exercise Sciences and Medicine.

The programme will be broad based and focusing on clinical aspects. It is designed to be competency-based, rather than time-based.

Admission Requirements

At the point of application for this subspecialty residency programme:

a) Applicants must have completed or in the process of completing their primary specialties or disciplines which consist of Advanced Internal Medicine, Emergency Medicine, Orthopaedic Surgery, and Family Medicine (FM) (i.e. FM should be completed at the Master of Medicine level);

b) Applicants must be employed by employers endorsed by Ministry of Health (MOH); and

c) Residents who wish to switch to this residency programme must have waited at least one year between resignation from his / her previous residency programme and application for this residency programme.

At the point of entry to this residency programme, residents must have fulfilled the following requirements:

a) Have obtained specialist accreditation, or have applied for specialist accreditation in the primary specialties (Advanced Internal Medicine, Emergency Medicine, Orthopaedic Surgery) from Specialist Accreditation Board (SAB) or have obtained family physician accreditation or have applied for family physician accreditation from Family Physicians Accreditation Board (FPAB); and
b) Have a valid Conditional or Full Registration with Singapore Medical Council (SMC).

Selection Procedures

Applicants must apply for the programme through the annual residency intake matching exercise conducted by MOH Holdings (MOHH).

Continuity plan: Selection should be conducted via a virtual platform in the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross institution movement is restricted.

Less Than Full Time Training

Less than full time training is not allowed. Exceptions may be granted by SAB on a case-by-case basis

Non-traditional Training Route

The programme should only consider the application for mid-stream entry to residency training by an International Medical Graduates (IMG) if he/she meets the following criteria:

a) He / She is an existing resident or trainee in the subspecialty in the United States, Australia, New Zealand, Canada, United Kingdom and Hong Kong, or in other centres / countries where training may be recognised by the SAB; and

b) His / Her years of training are assessed to be equivalent to the local training by Joint Committee on Specialist Training (JCST) and / or SAB.

Applicants for subspecialty residency programme may enter residency training at the appropriate year of training as determined by the Programme Director (PD) and SSTC after receiving accreditation in the base specialty by the SAB.

Separation

The PD must verify residency training for all residents within 30 days from the point of notification for residents' separation / exit, including residents who did not complete the programme.

Duration of Specialty Training

The training duration must be 36 months.

Maximum candidature: All subspecialty residents must complete the training requirements, requisite examinations and obtain their exit certification from JCST not more than 24 months beyond the usual length of their training programme. The total candidature for Sports Medicine is 36 months Sports Medicine residency + 24 months candidature.

Nomenclature: Sports Medicine residents will be denoted by SS1, SS2 and SS3 according to their residency year of training.

"Make-up" Training

"Make-up" training must be arranged when residents:

- Exceed days of allowable leave of absence / duration away from training; or
- Fail to make satisfactory progress in training.

The duration of make-up training should be decided JCC and should depend on the duration away from training and / or the time deemed necessary for remediation in areas of deficiency. The JCC should review residents' progress at the end of the "make-up" training period and decide if further training is needed.

Any shortfall in core training requirements must be made up by the stipulated training year and / or before completion of residency training.

Learning Outcomes: Entrustable Professional Activities (EPAs)

Residents must achieve level 4 of the following EPAs by the end of residency training:

	Title
EPA 1	Providing medical coverage for participants of sporting events
EPA 2	Optimising performance and health for well and ill populations
EPA 3	Managing sport and exercise injuries
EPA 4	Performing common procedures required in sports and exercise medicine

Learning Outcomes: Core Competencies, Sub-competencies and Milestones

The programme must integrate the following competencies into the curriculum, and structure the curriculum to support resident attainment of these competencies in the local context.

Residents must demonstrate the following core competencies:

1) Patient Care and Procedural Skills

Residents must demonstrate the ability to:

- Gather essential and accurate information about the patient
- Counsel patients and family members
- Make informed diagnostic and therapeutic decisions
- Prescribe and perform essential medical procedures
- Provide effective, compassionate and appropriate health management, maintenance, and prevention guidance

Residents must demonstrate the ability to:

- Diagnose and manage sport and exercise injuries, and sport and exercise related medical conditions in a tertiary care setting.
- Fulfil the duties of a Team Physician, including preparticipation screening, event medical coverage, doping control and counselling, early management of sport and exercise injuries, and sports-related medical conditions in a primary care setting.
- Perform exercise testing and prescription in both diseased and disease-free populations.
- Apply the principles of Sport and Exercise Sciences (i.e. Exercise Physiology, Strength and Conditioning, Sports Nutrition, Sports Biomechanics, Sports Psychology) in the management of competitive and recreational athletes.

2) Medical Knowledge

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioural sciences, as well as the application of this knowledge to patient care.

Residents must demonstrate knowledge of:

- A wide variety of sports
- Sports biomechanics including the laboratory, tests and equipment
- 2d video capture, data post-processing and analysis (performance analysis)
- Video-based 3d motion analysis with the use of:
  - The vicon 3d opto-reflective infrared camera (or similar)
  - Kistler piezoelectric force plates (or similar)
- Controversy surrounding the requirements for one macronutrient in sport nutrition, including how or whether advice/recommendations popular with the general public should be applied to athletes
- Latest research regarding sports nutrition
- Physiological 'problems' that can limit athletic performance (in sports or exercise domains of resident's choice), and nutrition 'solutions' to those problems
- Risks of intentional and inadvertent doping among athletes arising from the use of nutrition supplements
- Role of sports physiology and its service model, including the rationale and importance of evaluating acute responses and chronic adaptations in athletic performance
- The broad spectrum of specific factors which can affect athletic performance (e.g., diet, environmental, ergogenic aids) and principles of training
- Importance of athlete monitoring in achieving optimal sporting performance, including auxiliary training interventions and recovery methods
- Theory of sports psychology
- Latest research regarding one of the above topics and its applicability
- How to integrate psychological skills into a training programme

3) System-based Practice

Residents must demonstrate the ability to:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty
- Incorporate considerations of cost awareness and risk / benefit analysis in patient care
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve patient care quality. This includes effective transitions of patient care and structured patient hand-off processes
- Participate in identifying systems errors and in implementing potential systems solutions

Residents must demonstrate ability to:

- Work effectively within the athlete support system, collaborating with the athlete's coaches and sport scientists (e.g. strength and conditioning coach, sport biomechanist, sport nutritionist, exercise physiologist, sport psychologist), as well as allied health (e.g. sports physiotherapists, sports podiatrist, sports dietitian, clinical exercise physiologist)

4) Practice-based Learning and Improvement

Residents must demonstrate a commitment to lifelong learning.

Resident must demonstrate the ability to:

- Investigate and evaluate patient care practices
- Appraise and assimilate scientific evidence
- Improve the practice of medicine
- Identify and perform appropriate learning activities based on learning needs

Residents must demonstrate ability to:

- Conduct applied research in the fields of Sport and Exercise Sciences and Medicine

Residents must undergo the following observership:

- Observe practical sessions of a sports nutritionist working with athletes (clinical / workshop sessions)
- Observe practical sessions of a sports psychologist working with athletes and / or coaches

5) Professionalism

Residents must demonstrate a commitment to professionalism and adherence to ethical principles including the SMC's Ethical Code and Ethical Guidelines (ECEG).

Residents must:

- Demonstrate professional conduct and accountability
- Demonstrate humanism and cultural proficiency
- Maintain emotional, physical and mental health, and pursue continual personal and professional growth
- Demonstrate an understanding of medical ethics and law

Residents must demonstrate adherence to the World Anti-Doping Agency (WADA) Code.

6) Interpersonal and Communication Skills

Residents must demonstrate ability to:

- Effectively exchange information with patients, their families, professional associates, and coaches / trainers
- Create and sustain a therapeutic relationship with patients and families
- Work effectively as a member or leader of a health care team
- Maintain accurate medical records

Residents must demonstrate ability to:

- Foster professional and healthy interactions within the multidisciplinary team supporting the athlete, including coaches, sports administrators, sport scientists, allied health professionals (e.g. sports physiotherapists, sports podiatrists, clinical exercise physiologists, sports dietitians), and medical colleagues from other disciplines (e.g. sports orthopaedic surgeons).

Other Competency: Teaching and Supervisory Skills

Residents must demonstrate ability to:

- Teach others
- Supervise others

Learning Outcomes: Others

Residents must attend Medical Ethics, Professionalism and Health Law course conducted by Singapore Medical Association (SMA).

Residents must obtain the following certifications before or within a year after commencing Sports Medicine Residency Programme, and maintain them during residency training:

- Basic Cardiac Life Support
- Advanced Cardiac Life Support
- Advanced Trauma Life Support

Curriculum

The curriculum and detailed syllabus relevant for local practice must be made available in the Residency Programme Handbook and given to the residents at the start of residency.

The PD must provide clear goals and objectives for each component of clinical experience.

Learning Methods and Approaches: Scheduled Didactic and Classroom Sessions

Residents must attend the structured Sports Medicine Training Programmes (SMTP) sessions and are expected to attain a minimum of 75% attendance.

Continuity plan in the event of a protracted outbreak:

a) If cross institution movement is restricted:
The didactic sessions should be held in a hybrid manner i.e., face to face didactic sessions between the residents and presenters / moderators / facilitators should be held with social distancing measures if all are within the same campus, and the sessions should be simultaneously broadcasted to the rest who are physically in a different campus.

b) If face-to-face on-site meeting is disallowed:
The didactic sessions should be conducted via virtual platforms.

Learning Methods and Approaches: Clinical Experiences

1) Compulsory Rotations

The resident must complete:

- 30 months of clinical Sport and Exercise Medicine rotations

- 6 months of Sport and Exercise Sciences rotation

During the clinical Sport and Exercise Medicine rotations, residents must run at least three full-day Sport and Exercise Medicine clinics per week under supervision, performing diagnostic and therapeutic procedures, conducting event medical coverage, conducting anti-doping counselling, conducting exercise tests, and prescribing exercise. Resident should be allowed to run up to 2 clinic sessions per week to maintain their base specialty. Exchange or rotation of residents amongst the accredited sites or institutions is strongly recommended to provide more exposure for residents.

During the Sport and Exercise Sciences rotation, residents must continue to attend combined teaching sessions and run at least three hospital-based clinic sessions a week, in order to stay in touch with clinical work.

2) Attachments

a) Compulsory Attachments

The resident must undergo the following part-time attachments, either sequentially or concurrently.

	Min hrs	**Area(s) of focus**
Sports Physiotherapy / Training / Rehabilitation	30	(a) Principles of physiotherapy (b) Practical methods and techniques
Sports Podiatry	10	(a) Podiatric assessment of the foot (b) Fabrication of orthotics
National Sports Association	2 hours each, at 10 different sports	To observe national team training sessions

For the attachments, residents must be attached to departments within any of the institutions (i.e. restructured hospitals or Singapore Sport Institute). If the relevant discipline is not offered by the any of the institutions, residents should be attached to a private institution / practice.

b) Elective Attachments

During the 30 months clinical Sport and Exercise Medicine rotations, residents are encouraged to concurrently undergo the elective attachments at the following Sport and Exercise Medicine related department/s for exposure and experience:

- *Emergency Medicine*
- *Paediatric Medicine*
- *Geriatric Medicine*
- *Rheumatology*

- *Rehabilitation Medicine*
- *Cardiology*
- *Respiratory Medicine*
- *Endocrinology (e.g. Weight Management Centre, Singapore Sport & Exercise Medicine Centre @ Changi General Hospital)*
- *Orthopaedic Surgery*
- *Paediatric Orthopaedic Surgery*
- *Underwater Medicine*
- *Aviation Medicine*
- *Others (subject to approval from Sports Medicine SSTC)*

Only in exceptional circumstances (e.g. limited availability of the elective attachment) and with the agreement of the Sport and Exercise Sciences Supervisor and the Sport and Exercise Medicine Supervisor for the period of the attachment, can the elective attachment / s fall within the 6-month Sport and Exercise Sciences rotation. Each elective attachment must be capped at 1 month, and the total duration of all elective attachments during the course of the residency must be capped at 6 months.

If cross institution movement is restricted, residents should spend the duration of the rotation in the specialty department of the parent institution, if possible.

Learning Methods and Approaches: Scholarly/Teaching Activities

Residents must demonstrate evidence of scholarly activities through one or more of the following:

- Publication of articles, book chapters, abstracts, or case reports in peer-reviewed journals
- Publication of peer-reviewed performance improvement or education research
- Presentation of peer-reviewed abstracts presented at regional, state, or national specialty meetings
- Poster or Oral Presentation at a local or international meeting / conference
- Participation in research project or publication in peer reviewed journals
- Participation in the academic programme for a conference or teaching series in an academic capacity (e.g. scientific programme of a conference, reviewing abstract submissions, curating the Sports Medicine Training Programme i.e. selecting the topics and speakers and aligning it with the curriculum)

Continuity plan in the event of a protracted outbreak:
Residents should continue to publish in journals, or to present posters and / or abstracts in local or international meetings and conferences whether they are held in person or in synchronous online formats.

Learning Methods and Approaches: Documentation of Learning

Residents must log the following cases and procedures during their residency training:

Areas		Minimum no. of cases / procedures
Diagnose and manage common acute and chronic sports injuries	Head and neck injuries	10
	Spinal injuries	25
	Upper limb injuries	50
	Lower limb injuries	100
	Chest and abdominal injuries	10
Diagnose and manage common sports-related medical conditions	Acute febrile illness	5
	Asthma, exercise induced asthma, and other respiratory disorders	10
	Diabetes and other metabolic disorders	10
	Epilepsy and other neurological conditions	3
	Hypertension, congenital and acquired cardiovascular disease or dysfunction	15
	Bleeding and other haematological disorders	3
	Other medical conditions affecting participation in sport and physical activity (e.g. chronic fatigue syndrome)	-
The appropriate use and interpretation of investigative procedures commonly used in Sport and Exercise Medicine, including X-rays, bone scans, CT scans, MRI, musculoskeletal ultrasounds, and other imaging techniques		-
Perform common diagnostic procedures in Sport and Exercise Medicine, including:	Musculoskeletal ultrasound sonography of the heel, ankle, knee, elbow, shoulder, and muscles	25
	Compartment pressure measurement	3

	Gait analysis	10
Perform common therapeutic procedures in Sport and Exercise Medicine:	Cortisone injection	15
	Ultrasound-guided cortisone injection	5
	Knee / other joint aspiration	10
	Ultrasound-guided aspiration	5
	Extra corporeal shock wave therapy	10
	Toilet and suture for superficial wounds	5
	Sports taping	15
Conduct pre-participation screening		15
Conduct event medical coverage (including CPR, spinal injury care, etc)		10
Perform Anti-doping counselling / anti-doping educational and doping control activities		3
Perform exercise testing	Anthropometry (including skinfolds)	5
	Graded exercise stress test	10
	Exercise-induced asthma	2
	Direct measurement of oxygen consumption	3
	Tests of anaerobic capacity	3
	Strength testing	3
	Agility tests	3
	Measurement of power	3
Apply metabolic calculations and prescribing exercise to medical and special populations	Diabetics	5
	Hypertensives	5
	Asthmatics	3
	Cardiac patients	5
	Overweight and obese individuals	10
	Children	3
	Elderly	5

	Physically disabled (e.g. amputees, wheelchair athletes, stroke)	3
Assist in Sports Orthopaedic surgical procedures	Anterior cruciate ligament reconstruction	2
	Partial meniscectomy	2
	Meniscal repair	1
	Supraspinatus repair	2
	Acromioplasty	2
	Bankart repair, inferior capsular shift	2
	Ankle stabilisation procedures	2
	Spinal decompression	2
	Operative reduction and internal fixation of fractures	3
	Manipulation and reduction of shoulder dislocation	3
	Fasciectomy / fasciotomy	1
Observe or perform common sports physiotherapy modalities and methods	Interferential current treatment	3
	Ultrasound treatment	3
	Icing, compression	3
	Heat / short wave therapy	3
	Traction	1
	Mobilisation	3
	Manipulation	3
	Deep friction massage	5
	Soft tissue massage	5
Observe common sports podiatry methods	Fabrication of orthotics (including plantar fascia accommodation)	5
	Podiatric assessment of the foot	10
Observe common sports rehabilitation training methods	Proprioception training	5
	Agility training	5
	Strength training	5
	Flexibility training	5

	Core stability exercises / Pilates	5
	Specific rehabilitation protocols e.g. ACL, rotator cuff exercises	5
	Water-based training	5
Critically evaluate Sports Medicine and Sports Science literature		-

Summative Assessments

	Summative assessments	
	Clinical, patient-facing, psychomotor skills etc.	Cognitive, written etc.
SS3	a) OSCE	a) MCQ b) Paper Critique
SS2	Not Applicable	Not Applicable
SS1	Not Applicable	Not Applicable

S/N	**Learning outcomes**	**Summative assessment components**		
		MCQ	OSCE	Paper Critique
1	EPA 1: Providing medical coverage for participants of sporting events	✓	✓	✓
2	EPA 2: Optimising performance and health for well and ill populations	✓	✓	✓
3	EPA 3: Managing sport and exercise injuries	✓	✓	✓
4	EPA 4: Performing common procedures required in sports and exercise medicine	✓	✓	✓