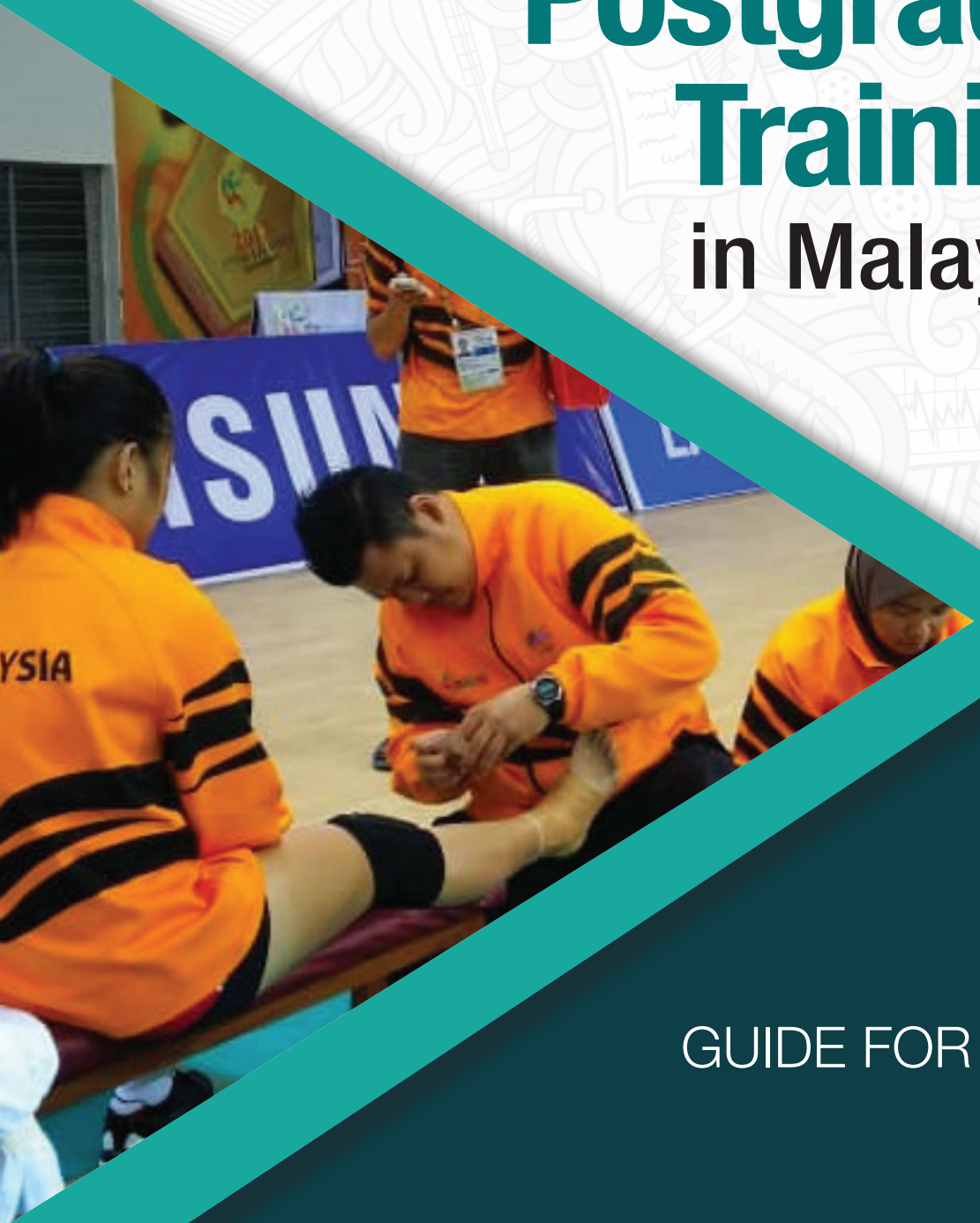
Sports Medicine Postgraduate Training in Malaysia



GUIDE FOR APPLICANTS

VERSION 1, 2022

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Preface

What is this document?

This guide is for those applying to enter the programme of Master in Sports Medicine offered by Universiti Malaya. It contains information on the entry requirements, entry and selection process, syllabus, and summarises the assessment methods as outlined by the National Postgraduate Medical Curriculum (NPMC). It is an extract from the Postgraduate Curriculum for Sports Medicine.

The National Postgraduate Medical Curriculum

The National Postgraduate Medical Curriculum for Sports Medicine aims to provide a standardised structure for the teaching, assessment and training of sports physicians in Malaysia. The Universiti Malaya (UM), is currently the only university offering this postgraduate degree, putting UM at the forefront of developing the national curriculum and training in Sports Medicine. Specifically, NPMC serves to:

1. outline the content structure and process of training in Sports Medicine.
2. articulate the minimum knowledge and skill sets required for successful completion of training as Sports Medicine specialist.
3. delineate the program structure and specify due diligence to guide and facilitate transparent decision making at all levels of governance.
4. create the common standard for the curriculum, training, and assessment methods.

This is a collaborative effort from the 'Sports Medicine Conjoint Board', Ministry of Higher Education (MOHE), and Ministry of Health (MOH).

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Introduction

What is Sports Medicine?

Sports Medicine, also known as Sports and Exercise Medicine (SEM) in other parts of the world, is a relatively new medical discipline which specialises in medical problems related to exercise and sports. Although there is no standard definition for Sports Medicine, it is widely recognised as a specialty which focuses on the treatment, management and prevention of injuries relating to sports and exercise at all levels of participation. The scope also entails the optimisation of performance. With time, the specialty has evolved and now also additionally focuses on the use of exercise for the treatment and prevention of a wide range of medical diseases, in particular non-communicable diseases. The form of medical care offered by sports medicine is evolving from a model that is primarily individual-based, to one that incorporates both individual and team care, and public health. This also includes providing medical coverage for sports events. Much of this development is shared by the sports medicine fraternity across different regions. Sports Medicine in Malaysia assumes an additional role in the immediate post-operative rehabilitation of patients undergoing selected orthopaedic surgeries of the knee and shoulder.

Purpose of this guide

The purpose of this guide is to inform prospective applicants seeking a career in Sports Medicine. It is a compilation of important information about the structure of the programme including key aspects of the curriculum (entry requirements, process, training structure, assessment and exit criteria). It is intended to provide information so as to evaluate whether the programme suits personal interests and matches career needs. A knowledgeable based choice can be essential to achieving a successful outcome following enrolment.

Size of the specialty

As of March 2020 and over a span of 20 years, UM's Masters programme has produced over 70 Sports Medicine specialists. The majority of these graduates are sponsored by the Malaysian government. Some are now serving in hospitals under the Ministry of Defence, the National Sports Institute, numerous institutions of higher learning, private practice, and the largest proportion serves the Ministry of Health (MOH). Currently, only a small number (12) of the MOH hospitals are supported by sports physicians. However, the number of applicants for Master of Sports Medicine is increasing possibly due to the stronger presence of its alumni in the MOH. This is probably brought about by a greater recognition that there is unmet need in post-operative patient care, and the increase in exercise prescription for wide range of health problems including lifestyle diseases.

Unique features of Sports Medicine

Sports Medicine is a specialty that is built from general medicine, musculoskeletal and orthopaedic medicine, and exercise prescription. Whilst it can be focussed on the treatment of athletes, specialists can also transcend the sports and exercise arena and work collaboratively with other medical disciplines to provide physical activity interventions to ensure the best recovery plan for individuals in their recovery from other medical conditions.

Why choose Sports Medicine as a career?

Sports medicine is a fulfilling and wide ranging career working one-to-one with patients and teams, often achieving visible improvement, be it within sports and exercise, or in a patient's recovery from illness resulting in quality of life benefits. A candidate may choose Sports Medicine as a career if they are passionate about:

1. Advancing health care for individuals who are engaged in organised sports and exercise. Specifically, this can be achieved through the following means:

- providing specialised medical and administrative services for sports events of different levels (e.g. social/ amateur to professional sports) and consultative services to sports agencies and organisations.
- optimising performance (especially in athletic population and competitive sports), prevention and management of injuries related to sports/exercise.

2. Advocating exercise for general health, wellness and fitness.
3. Promoting exercise therapy for the treatment and prevention of various medical conditions.

Candidates need to have a reasonable clinical competency and an interest in the fields of general medicine, orthopaedics, rehabilitation, and allied sports sciences (e.g. nutrition, biomechanics, exercise physiology and psychology). As the medical care of highly competitive athletes and sports team also falls under the purview of sports medicine, it is pertinent for the candidates to familiarise themselves with the respective regulations (e.g. doping) and the code of conduct enforced by the governing sports bodies.

1. The Specialty of Sports Medicine Programme

Pathways

The Master of Sports Medicine programme offered by Universiti Malaya is currently open to only Malaysian doctors who have been awarded full registration by the Malaysian Medical Council (MMC) and have completed a minimum of two years' service in MOH or in any facility recognised by MMC. The Medical Specialist Pre-entrance Examination (MedEx) which is jointly conducted by the University and Malaysian Examinations Council, is a pre-requisite for entry.

Based on meeting the above criteria the Sports Medicine Specialty board (comprising of representatives from the University and other stake holders), will identify the applicants to be shortlisted for the next phase of recruitment process. In this final phase of the recruitment process, applicants will undergo further assessment on a few pre-selected core areas of Sports Medicine. The Specialty Board will then convene to finalise the list of successful applicants. The areas to be tested will be updated periodically and can be accessed on the MedEx website.

For holders of a basic medical degree, there is currently no parallel pathway in the training for Sports Medicine Specialists in Malaysia. However, the faculty will give due consideration for trainees who wish to switch to Sports Medicine from closely related specialties such as Family Medicine, Internal Medicine, Surgery, Orthopaedics or Rehabilitation Medicine.

Stages of training

Trainees accepted into the Sports Medicine Specialty normally undertake a 4-year full time in-campus study programme. UM has initiated a new 3+1 arrangement with the MOH in the 2020/21 intake where small number of students who will perform 1 year of their training in MOH hospitals. This programme is divided into two key stages:

Stage 1 covers the first year of training, during which, the trainees focus on advanced knowledge in applied sciences, basic clinical skills (i.e. history taking and physical examination), and acquire some exposure in related areas of Internal Medicine. Trainees in Stage 1 will be given responsibility in the day-to-day running of a Sports Medicine clinic. Trainees are also expected to demonstrate a reasonable competency in basic clinical skills and knowledge by the end of Stage 1. Both levels of competency in applied science knowledge and clinical skills will be assessed in each semester to evaluate the student's eligibility to sit the Year 1 summative exam. Irrespective of the outcome of the Year 1 summative exam, trainees are allowed to progress to Stage 2. However, trainees who are unsuccessful in their Year 1 exam will be required to re-sit the exam. The maximum number of attempts allowed for the Year 1 summative examination is three. In exceptional circumstances, a fourth attempt may be allowed by the faculty.

Stage 2 of Sports Medicine training covers years 2 to 4 of the programme. Trainees will be assigned to external rotations (out of UMMC Sports Medicine clinic), to gain exposure to other related specialty fields such as Accident & Emergency, Orthopaedic, Rehabilitation and Radiology. Students will also be assigned to a number of different sports medicine attachments/placements outside of UMMC (e.g. MOH hospitals, National Sports Institute and other institutions that the conjoint board deem as beneficial). The purpose is for trainees to experience and appreciate the breadth and depth of sports medicine services. The award of the Masters degree requires trainees to pass their final exam at the end of year 4 after having met all the pre-requisites for sitting the exit exam as shown in figure below.

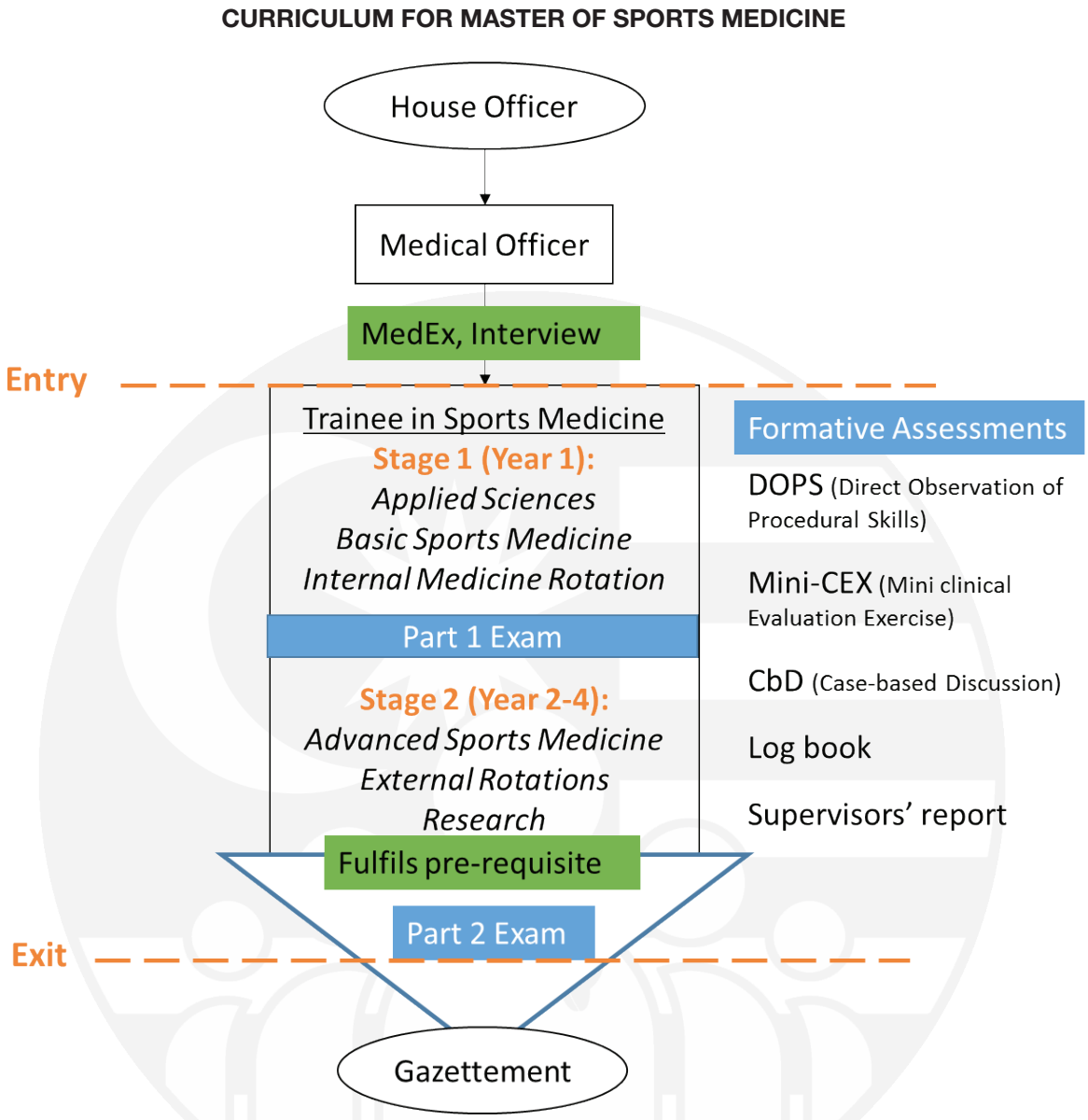

Figure 1: Overview of the curriculum for Master of Sports Medicine

MedEx - Medical Specialist Pre-Entrance Examination

2. Entry Requirements

Malaysian candidates wishing to enrol for the Post graduate program need to hold a Bachelor of Medicine and Bachelor of Surgery (MD, MBBS or its equivalent) from a recognised academic institution approved by the Malaysian Medical Council (MMC), or an equivalent approved by the Senate of the Universiti Malaya. It is a pre-requisite for candidates to have completed at least two years of clinical experience as fully registered members of the Malaysian Medical Council (MMC), under the Medical (Amendment) Act 2012 and Medical Regulations 2017. Candidates should also hold valid Annual Practicing Certificate (APC) for at least two successive years prior to the application.

International candidates are subject to additional requirements. Apart from meeting the above criteria, candidates need to produce letter of good standing from the relevant health authorities and reports from supervisors based in countries recognised by universities in Malaysia. Proof of English language competency is needed if the candidates do not come from English-speaking country (e.g. United States of America, Canada, United Kingdom, Australia, New Zealand), or have not undertaken any formal study or training conducted in the English language. The minimum requirement for IELTS academic overall is 6, or TOEFL iBT 80. Results of other English papers may be accepted at the discretion of the university.

For all candidates it is desirable that they are able to demonstrate reasonable competency in fields related to sports medicine. Clinical experience in sports medicine, orthopaedics, emergency, internal medicine or primary care medicine are advantageous for meeting the requirements outlined in the Entry Essential Learning Activities (ELAs) set by the Sports Medicine National Curriculum Board. Entry ELAs serve as guide on the minimum level of professional skill sets expected of the candidates prior to enrolment.

For entry assessment, candidates are expected to demonstrate some basic clinical competency in the following ELAs:

i. Counselling clients on importance of exercise
ii. Non-pharmaceutical lifestyle intervention for obesity in adults
iii. Taking history for overuse musculoskeletal injuries
iv. Management of common acute musculoskeletal injuries
v. Management of common medical emergencies

The ELA for the first clinical task on exercise counselling is shown below. Please refer to Appendix 1 for details on the other ELAs. It is essential for all candidates to demonstrate all of the knowledge, skills and other behaviours detailed in these ELA's.

Entry Level Essential Learning Activity 1: Counselling clients on the importance of exercise

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Characterisation of the following exercise types and health benefits associated with each type • Aerobic • Strengthening • Flexibility • Proprioception/ balance Understand the benefits of exercise and physical activity • Familiar with common clinical conditions amenable to exercise • Deleterious effect of physical inactivity Understanding common misconceptions and barriers to exercise especially in patients with co-morbidities	Effectively communicates • Protective effects of exercise in lay terms. • Explain the concept of FITTE components (Frequency, Intensity, Time, Type, Enjoyment) that underlies exercise prescription strategies • Differences between exercise, physical activity and physical fitness Able to demonstrate/ suggest relevant exercises	Attentive to the concerns of clients Empathetic towards patient's limitation in performing exercise
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Evaluate patient's lifestyle and limitations/ barriers with thorough history taking Advises on the significance of adopting healthy lifestyle Discusses various options of physical activity	Not using simple and clear instructions Prescribing an exercise programme without personalising to the needs of the client Omit to educate patients on overloading	Not assessing the patient's understanding including proper exercising techniques Does not set achievable goals for the patient
Assessment/ Evidence		
Entry assessment: viva/ OSCE		

Applicants are encouraged to reference the selection criteria provided in the Malaysia Examinations Board website (https://www.mpm.edu.my/medex/selection-criteria) and Universiti Malaya's website (https://medicine.um.edu.my/postgraduate) for updates.

3. Entry Process

Application Process

As with many of the specialty programs in Malaysia, Masters of Sports Medicine offers only one intake per year. Unlike other bigger specialties, the number is considerably smaller and ranges from 8-12 candidates per year of intake. Candidates who are funded or sponsored by individuals or institutions other than MOH or Universiti Malaya (UM), will be admitted under self-funding quota. Self-funding applications for the program are to be made online directly to the university offering the course. MOH and UM sponsored candidates should apply following the process set out by their respective organisations.

Starting from 2020, the university is utilising an annual entrance exam coordinated by Malaysian Examination Board to shortlist candidates. Shortlisted candidates will then be asked to undergo a second phase in the selection process. Private/ overseas candidates may contact the postgraduate office for the examination outcome two months after completion of the assessment process; MOH-sponsored candidates will receive the outcome of the assessment after three months.

To be eligible for sponsorship from Ministry of Health (MOH), candidates must be currently serving in MOH and free from any disciplinary action by any health regulatory bodies. An updated evidence of clinical service in MOH is to be produced along with the evidence of satisfactory job performance (i.e. achieving a minimum of 85% in their Annual Appraisal Report for three successive years).

Others

Other than fulfilling the minimum requirements, candidates can gain additional favourable consideration by showing evidence of interest in the field of sports medicine. This may be in the form of certificates for Sports Medicine courses, active sports participation or contributions to sports journals or research. Evidence indicative of the candidates' personal attributes social achievements (e.g. leadership quality, communication skills, trustworthiness etc.) can also be of value.

Ministry of Health (MOH) candidates

Application for master's programme will be advertised in mainstream newspapers and the MOH website in July each year. Ministry's candidates are advised to refer to the Training Management Division (Bahagian Pengurusan Latihan - BPL) of MOH for updated information on application for all Masters Specialty training programmes. The entry quota for candidates from the MOH is the highest, comprising of 80-90% of the total intake each year.

Self-funding / international candidates

Since UM is the only university offering this course, all applications from self-funding candidates will need to be directed to UM. Applications can be made online throughout the year via the university's website (https://medicine.um.edu.my/postgraduate). Alternatively, prospective candidates may refer any enquiries to the university, specifically the Faculty of Medicine, or through the head of Sports Medicine Unit before submitting an application.

Entrance examination

There are two main components in the entrance examination: a written exam followed by a practical/ interview assessment.

The written exam, which is currently coordinated by the Malaysia Examination Board, is held once a year. This pre-entrance exam comprises of Single Best Answer (SBA) type questions that are to be completed in two hours. The result for this exam is valid for three years. Candidates, therefore, have the option to submit the same result for three consecutive years, or re-sit the exam the following year to

achieve better results. Candidates are advised to refer to the Malaysian Examination Council website for any updates.

Shortlisted candidates may expect to receive the notification for second phase of assessment about one month after the Pre-entrance exam. The second phase of assessment comprises of objective structured clinical examination (OSCE) and viva. Although the specialty board in principle will invite candidates with results in the top 30% bracket and use consistent assessment methods, the actual number of candidates called for the practical exam and actual assessment process may vary from year to year. These are factored by the prevailing policies, the number of training positions available and the evolving needs of the specialty. However, the subject areas for Pre-entrance exam, which are listed in Appendix 1, will likely remain unchanged.

Apart from competencies in the required ELAs, behavioural and personal attributes (e.g. communication skills, problem solving skills, cultural fit, contributions at work place and community etc.), will also form part of the evaluation in the second phase of assessment. The typical yearly timeline for entry process for scholarship application and entrance examination is shown below. Applicants are advised to check the relevant websites for updates as this timeline is subject to changes.

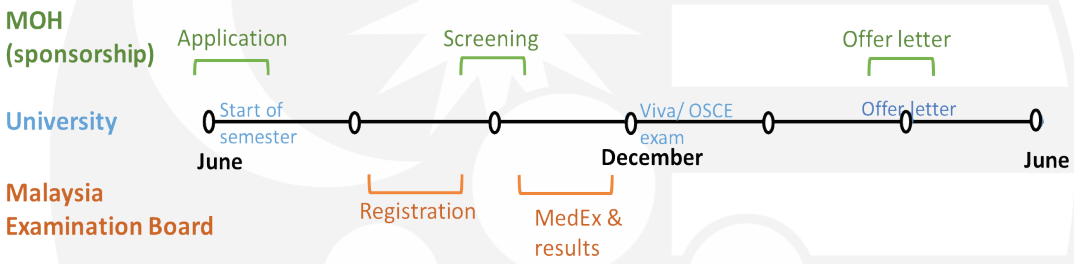

Figure 2: Timeline of application process

Note: International and self-funded applicant need only to refer timeline of university and the Malaysian Examination Board

The following websites will provide further information:

- ehlp.moh.gov.my (MOH Scholarship)
- https://www.mpm.edu.my/medex/background-of-medex (MedEx)
- https://medicine.um.edu.my/postgraduate (University)

4. Syllabus

Module A:
- Exercise physiology
- Biomechanics
- Nutrition
- Sports Psychology
- Strength and conditioning

Module B:
- Musculoskeletal injury and repair
- Injury prevention
- Regional problems
- Radiology and other investigations
- Treatment modalities
- Environmental injuries and illness
- Drugs in sports
- Special population

Module C:
- Exercise for health
- Pre-participation screening
- Physical fitness testing
- Exercise Prescription for specific medical condition and special population

Module D:
- Inflammation control
- Regional rehabilitation
- Rehabilitation component
- Rehabilitation tools
- Return to play

Module E:
- Event coverage
- Ethics in sports
- Sudden cardiac death

Module F:
- Radiology
- Emergency Medicine
- Orthopaedic
- Internal Medicine
- Rehabilitation Medicine
- National Sports Institute

Module G:
- Principles of clinical research
- Literature review
- Appraisal of evidence
- Conducting research, analysing data and writing report
- Research ethics

Figure 3: Syllabus for the programme

5. Assessment Tools

Strategies for assessment Domains: cognitive, skills and affective domain for active and passive learning, problem solving		
Formative	**Interim**	**Summative**
Characteristics		
Allows students to evaluate the quality of their work, identify strategies to improve and to set goals.	Allows the comparison/ marking of a student's understanding, or performance against a set of criteria. It tracks students' academic trajectory standards to provide feedback for further teaching. It also serves to evaluate the quality of the learning environment.	Allows the comparison of a student's understanding or performance against a set of consistent standards and criteria. It provides an overall description of students' status and evaluates the effectiveness of the educational environment.
Occurrence		
Performed throughout the year. Immediate feedback.	Performed twice a year, six monthly interval by internal supervisors. Reports from external supervisors at end of each posting.	Performed at end of year 1 and year 4 (end of stage examinations).
Tool		
Primarily work-based assessment • CbD • Mini CEX • DOPS • Clinical audit • Presentations	Primarily theoretical/ viva assessment • Review of logbook and the assessment of the portfolio by an internal supervisor • Viva Aims to track the trainees' satisfactory attainment and achievement of learning milestones.	Combination of theoretical, clinical and viva • Thesis/ publication • SAQ • OSCE • OBA • Viva

6. Appendices

Appendix 1: Entry ELA

Entry ELA 1: Counselling clients on the importance of exercise

Knowledge Know, Facts, Information	Skills Do, Practical, Psychomotor, techniques	Attitudes & Values Feel, behaviours displaying underlying values or emotions
Characterisation of the following exercise types and health benefits associated with each type • Aerobic • Strengthening • Flexibility • Proprioception/ balance Understand the benefits of exercise and physical activity • Familiar with common clinical conditions amenable to exercise • Deleterious effect of physical inactivity Understanding common misconceptions and barriers to exercise especially in patients with co-morbidities	Effectively communicates • Protective effects of exercise in lay terms. • Explain the concept of FITTE components (Frequency, Intensity, Time, Type, Enjoyment) that underlies exercise prescription strategies • Differences between exercise, physical activity and physical fitness Able to demonstrate/ suggest relevant exercises	Attentive to the concerns of clients Empathetic towards patient's limitation in performing exercise

Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Evaluate patient's lifestyle and limitations/ barriers with thorough history taking Advises on the significance of adopting healthy lifestyle Discusses various options of physical activity	Not using simple and clear instructions Prescribing an exercise programme without personalising to the needs of the client Omit to educate patients on overloading	Not assessing the patient's understanding including proper exercising techniques Does not set achievable goals for the patient
Assessment/ Evidence		
Entry assessment: viva/ OSCE		

Applicants are encouraged to reference the selection criteria provided in the Malaysia Examinations Board website (https://www.mpm.edu.my/medex/selection-criteria) and Universiti Malaya's website (https://medicine.um.edu.my/postgraduate) for updates.

Entry ELA 2: Prescribing non-pharmacological lifestyle interventions for obesity in adults

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Fundamentals of obesity • Diagnosis and classification of obesity (WHO and Asian guidelines) • Predisposing factors • Metabolism of carbohydrate, fat and protein • Biopsychosocial issues surrounding obesity • Association/ dissociation between BMI and fat free mass Negative consequence of obesity • Alteration in systemic physiology • Complications with obesity Barriers to lifestyle management • intrinsic barriers • extrinsic barriers	History taking • to extract pertinent information for formulating management strategy such as identify special needs, assess understanding of clients • to establish trust and rapport with client Calculating body mass index (BMI)	Empathy Supportive Non-judgemental

Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Take a comprehensive history (e.g. risk factors, life style, dietary habits, social economic history and morbidity) Evaluation of accessibility to social and physical support available to patients Identify short term and long term goals Engage friends/ family members in management	Assuming BMI as an accurate measurement of adiposity Assuming all patients are the same and using a standard strategy for all patients Lack of appreciation for a multi-team approach and the importance of patient self-management (e.g. dietician, psychologist, medical and surgical input)	Not referring to standard guidelines (Malaysian CPG – Management Obesity) Not focused history on comorbidities, failed weight loss strategies and physical examination Attribute lack of treatment response to poor exercise adherence without thorough assessment
Assessment/ Evidence		
Entry assessment: viva/ OSCE		

Entry ELA 3: Managing overuse/chronic musculoskeletal injuries

Knowledge Know, Facts, Information	Skills Do, Practical, Psychomotor, techniques	Attitudes & Values Feel, behaviours displaying underlying values or emotions
Pathoetiology of overuse injury • Multifactorial causes (i.e. intrinsic and extrinsic factors, interplay between these factors • Cellular events underpinning spectrum of overuse injury Principles of management • Clinical manifestation • Identify treatment targets • Complications of conditions • Appropriate investigations and treatment options (surgical/ non-surgical and pharmacotherapy	Communication • Establishing rapport • Skilful use of structured questions • Provides relevant information and writes a clear indication for imaging or laboratory investigations • Counsel on indications for diagnostic and therapeutic procedures (e.g. joint aspiration) Basic examination skills • Knee and shoulder to elicit ACL deficiency, shoulder instability and shoulder impingement	Empathy Respectful Task focus Respect patient's privacy and confidentiality
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Develop good rapport with patient Taking a focused history Understands the unique demands of individuals involved in competitive sports Verifying information with patient	Temporal sequence of events not clearly elicited Unable to interpret and summarise history Failure to identify inconsistencies in history and physical examination	Neglect to confirm understanding of history through paraphrasing Did not make conscious effort to establish predisposing factors Did not consider re-visiting diagnosis in recalcitrant cases.
Assessment/ Evidence		
Entry assessment: viva/ OSCE		

Entry ELA 4: Managing trauma and common acute musculoskeletal injuries

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Anatomy and pathomechanics of acute injuries (e.g. sprains/ strains/ fracture-dislocations) Management of acute injuries • Acute management (e.g. indications for urgent referral, immobilisation, appropriate follow-up, complications) • PRICE principles for acute MSK injury Prehospital care	Diagnostic • able to perform primary and secondary survey • able to order and interpret appropriate investigations Communication • taking (informed) consent before examination/ interventions/ joint reduction Procedural • Able to assist joint reduction of simple dislocation • Able to assist in injection/ aspiration • Able to perform basic life support/ emergency resuscitation	Calm Resourceful
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Discuss findings and provisional diagnosis with the patient Educate patients on the signs and symptoms to monitor after discharge Interpret imaging investigations X-ray systematically and carefully	Missed diagnoses Failure to reassess for delayed presentation of limb/life-threatening conditions Poor documentation	Delayed referral Neglect to assess neurovascular status before and after interventions Failure to recognise an orthopaedic emergency
Assessment/ Evidence		
Entry assessment: viva/ OSCE		

Entry ELA 5: Managing common medical and surgical emergencies including collapsed athletes

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Differential diagnoses • Identify medical and surgical conditions presenting with shortness of breath, altered consciousness, palpitations, neurological signs that could be life threatening Management of collapse • Causes of collapse (especially during sports) • Prehospital care	Airway management and cardiopulmonary resuscitation Orders appropriate biochemical investigations (e.g. blood, urine) and interpret the findings Interpret ECG: Basic interpretation RBBB, LVH, ischaemic changes, Pulmonary embolism,	Stay calm and compose under stress Empathetic towards anxious relatives
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Adequate planning of patient care including transfer of care Proper handing over to primary team	Failure to refer in timely manner Does not anticipate potential complication or underestimating the severity of the problems	Inadequate documentation Did not perform serial assessment
Assessment/ Evidence		
Portfolio of courses/ log book Entry assessment: viva/ OSCE		

Appendix 2: Exit ELA

Exit ELA 1: Management of musculoskeletal (MSK) injuries

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Epidemiology, risk factors Injury mechanisms Clinical manifestation Related comorbidities Sequelae / complications of conditions Indications for surgery or non-surgical management Evidence based preventive, rehabilitation strategies	Purposeful and systematic history taking Attentive to details in order to make accurate diagnosis, or to identify possible provisional diagnoses when accurate diagnosis is not possible Appropriate decision-making ability in managing MSK conditions Clear documentation	Empathy Respectful Respect patient's privacy and confidentiality
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Develop good rapport with patient and surgeon Perform detail history taking and comprehensive physical assessment Discuss strategies of management with surgeons, if surgery is indicated Explain management plan with patients	Ignoring the patient's decision Raises inappropriate expectation Give the patient incorrect information	Did not clarify information with patient Suboptimal management Failure to correlate history, symptoms, sign and investigation findings
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 2: Interpret MSK radiological imaging

Knowledge Know, Facts, Information	Skills Do, Practical, Psychomotor, techniques	Attitudes & Values Feel, behaviours displaying underlying values or emotions
Radiological anatomy Indications and contraindications for MSK imaging Rationale for requesting specific modalities or views	Interpret images systematically Establishing radiological diagnosis Correlate radiological findings with the clinical presentations Communicate effectively with patient and radiologist	Respect for professional colleague and patient Systematic interpretation of the result
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Appropriate selection of investigations and views Explaining the rationale of the investigations and procedure involved Appropriate and accurate documentation Correct interpretation of radiological findings	Poor communication skills (did not explain the correlation between diagnosis, investigations findings and potential treatment) Wrong interpretation of radiological findings	Failure to identify radiological abnormalities Failure to appreciate that there may be dissociation between structural abnormality and symptoms
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 3: MSK intervention procedures

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
MSK anatomy Details of procedures e.g. principles, indications, contraindications, complications, patient preparation, technique, approach and post procedure care Pharmacological agents (Types, properties, preparationand selection)	Communication skills: able to give clear explanation of the procedure Infection control measures Obtaining consent for the procedure Performing correct procedure Proper documentation	Empathy Respect Systematic
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Explaining the procedure in detail Allow patient to ask questions Performing the procedure in a systematic approach Ensure the usage of correct drug/ technique	Gives incorrect information about the procedure Perform incorrect/ unendorsed technique Not adhering to aseptic technique and needle safety policy Did not obtain signed consent Failure to recognize contraindications for the procedure	Did not consider the need for chaperone Did not advise on proper post injection/aspiration care Incomplete documentation Did not verify expiry date of the drug used
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 4: Musculoskeletal rehabilitation post-orthopaedic surgery

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Surgical procedures and findings Sequelae/ complications of the surgery Principles of MSK rehabilitation	Appropriate decision-making ability in managing MSK rehab Communicate effectively with patient, surgeon and physiotherapist Correct exercise technique (hands-on)	Empathy Respectful Respect patient's privacy and confidentiality
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Develop good rapport with patient Implement correct exercise technique Teamwork	Ignoring the patient's limitation and progress Raises inappropriate expectation Give the patient incorrect information	Teach harmful exercise Suboptimal management
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 5: Sports emergencies management
Description: In particular, severe musculoskeletal (MSK) injuries, Concussion and Collapsed athlete.

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Epidemiology/ prevalence Sports related emergency conditions Principles of sports emergency management Knowledge of current Basic Life Support (BLS)/ Cardiopulmonary Resuscitation (CPR) guidelines Pre-hospital care Return-to-play decision making	CPR Proper documentation and referral Transporting collapsed athlete	Calm Respect Timeliness Leadership Confidence
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Able to identify life and limb threatening conditions Manage emergencies according to standard guidelines	Unsystematic approach Poor time management Poor leadership	Poor communication Inadequate documentation
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 6: Exercise Prescription

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Principles of exercise training in different age group, different physical ability and performance level Fitness component (health related- i.e. endurance, strength, flexibility) Pre-participation (PPE) examination Clinical exercise testing FITTE components (Frequency, Intensity, Time, Type, Enjoyment)	Perform PPE and appropriate exercise testing Counsel patient on physical activities/exercise Prescribe exercise for health, disease, post-surgical intervention	Respect individuality Caring Simple & clear language
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Perform thorough PPE and identify the issues in clients with different needs, abilities and expectations Able to select and perform appropriate clinical testing Discusses options of exercises according to FITTE principles	Close-ended questions Not using simple and clear instructions Prescribing an inappropriate exercise programme	Not assessing the client's barriers for exercise Does not set achievable or not personalising goals for clients Unaware of adverse effects of inappropriate exercise to client
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 7: Management of non-communicable diseases (NCD)

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Diagnosis, classification, predisposing factors and impact of NCD Effects of exercise in NCD Pharmacological and non-pharmacological intervention for NCD	Prescribe and modify exercise appropriately Able to identify indications for referral to primary team regarding management Identify and manage the complications of exercise	Respect for their privacy Empathy Supportive
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Identify risk factors and complications of the NCDs Take comprehensive history and perform physical examination	Using incorrect references Misinterpretation of clinical findings Failure to implement multidisciplinary approach/ identify relevant stakeholders to improve efficacy of exercise programmes	Incomplete history and physical examination Suboptimal assessment
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: OBA, SAQ, Clinical, viva/ OSCE		

Exit ELA 8: Research in Sports Medicine

Knowledge Know, Facts, Information	**Skills** Do, Practical, Psychomotor, techniques	**Attitudes & Values** Feel, behaviours displaying underlying values or emotions
Research methodology Certificate Good Clinical Practice Ethics of research conduct	Critically appraise literature Collaborate with other researchers Coherent and clear report writing	Honest in report findings and study limitations Open minded on other views/ ideas
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Identify specific and realistic study objectives/ methods Use appropriate statistical analysis	Plagiarism Cites outdated or poor quality references	Only report positive findings
Assessment/ Evidence		
Portfolio of courses/ logbook Exit exam: Research, Clinical, viva/ OSCE		

Glossary of Terms

APC	Annual Practicing Certificate
BPL	Bahagian Pengurusan Latihan (Training Management Division)
CbD	Case-Based Discussion
ELA	Essential Learning Activities
IELTS	International English Language Testing System
MedEx	Medical Specialist Pre-Entrance Examination
MMC	Malaysian Medical Council
MOHE	Ministry of Higher Education
MOH	Ministry of Health
NPMC	National Postgraduate Medical Curriculum
NSI	National Sports Institute
OSCE	Objective Structured Clinical Examination
SAQ	Short Answer Questions
TOEFL	Test of English as a Foreign Language
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
USM	Universiti Sains Malaysia

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