Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
Module 1 - Scientific Knowledge									
1-A: Exercise Physiology									
K	Origins and applications of exercise physiology basic and applied	●							
	Cellular metabolism and biomechanical pathways of energy production Aerobic, anaerobic, intramuscular phosphate	●							
	Human energy transfer systems during exercise Energy release from various sources including fats, carbohydrates, proteins Substrate utilisation during exercise	●							
	Energy systems in exercise Immediate and long term Lactate transfer VO2 kinetics, oxygen lag/debt	●							
	Measurement/ energy costs of exercise Basal metabolic rates Calorimetry / daily energy expenditure	●							
	Cardiovascular response and adaptations to exercise Blood pressure/ Cardiac output/ effects of training	●							
	Respiratory response and adaptations to exercise	●							
	Neuromuscular response to exercise Motor units Skeletal muscle structure/ function Fibre types	●							
	Evaluating exercise metabolism / neuromuscular activity	●							
	Hormones and endocrine systems in exercise	●							
	Principles of training Aerobic Anaerobic Adaptations to training Training regimes Maintenance and over- reaching	●							

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	Strength and conditioning Anabolic and catabolic processes Resistance/ eccentric training Children/ pregnancy Physiological changes Affect on muscle/ bone/ neural/ cardiovascular system Monitoring of training principles	●							
	Monitoring of exercise capacity/ training/ overtraining	●						●	
	Fitness assessment Definition Different components of fitness Rationale for performing assessment Tests for aerobic fitness, anaerobic fitness, strength, power, flexibility, body composition	●						●	
	Environment and exercise Thermoregulation/circulation/ hypothalamic response Exercise at altitude Exercise in the heat Exercise in the cold Exercise under water Exercise in low gravity Principles of training and adaptations in extreme environment	●							
	Ergogenic aids	●						●	
	Genetics and exercise	●							
S	Calculating energy utilisation	●						●	
	Estimating maximal oxygen consumption	●						●	
	Lung function testing	●						●	
	Force measurement							●	
E	Work with exercise physiologist including involvement with environmental studies and physiological testing								●
	Interaction with sports science and medicine team e.g. in elite sports team environment						●		●
1-B: Clinical Anatomy									
K	Clinically relevant regional anatomy, including the upper limb, lower limb, groin & pelvis, head & neck, thorax and abdomen, cervical spine, thoracolumbar spine	•							

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	Normal variations in anatomy and the relevance for injury risk, injury prevention and injury management	•							
S	Ability to relate anatomical knowledge to history taking and physical examination		•			•			
	Ability to relate anatomical knowledge to interpretation of medical imaging		•			•			
E	Regular tutorials with discussion of relevant anatomy								•
	Exposure to clinical anatomy in supervised training posts								•
	Review of anatomical knowledge at cadaver dissection sessions, as required								•
1-C: Nutrition and Exercise									
K	Macronutrients and energy Carbohydrate, fat, protein Recommended daily allowances and nutrient sources Calorific values and net energy values	•							
	Micronutrients Vitamins Vitamin supplementation Minerals (and effect on exercise performance)	•							
	Hydration for Exercise Water in the body Fluid replacement during exercise Fluid balance and exercise performance	•							
	Substrate utilisation during exercise Principles of glucose, lipid and protein utilisation Influence of diet on substrate utilisation	•							
	Diet and exercise in extreme environments	•							
	Body composition Gross composition of human body Body mass index Methods of assessment Health risks of different body types	•	•	•				•	
	Diet and health Effect of diet and exercise on cardiovascular health Effects of diet and exercise on development and management of diabetes	•						•	

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	Obesity, exercise and weight control Principles of energy balance Exercise in obese individuals Different diet regimes Exercise and weight loss	●				●		●	
	Nutrition for exercise Pre-competition Carbohydrate intake before, during and after exercise Children	●				●		●	
	Diet, glycogen stores and endurance	●						●	
	High fat diets and exercise	●						●	
	Protein and anabolic diets	●						●	
	Supplements	●						●	
	Alcohol and exercise performance	●						●	
	Disordered eating, bone health and female athlete triad	●						●	
S	Calculation of calorific expenditure			●				●	
	Formulation and analysis of food diaries			●				●	
	Food weighing			●				●	
	Calculation of body composition			●				●	
	To advise on dietary requirements for different exercise conditions/ training regimes and supplement use		●			●		●	
E	Working with nutritionist or state registered dietician						●		●
	Working with sports teams alongside experienced supervisor						●		●
	Working with patients with diabetes, obesity, cardiovascular disease e.g. in outpatient clinics		●						●
Module 2 – Population Health									
2-A: Primary Care									
K	Basic treatment options for common conditions seen in General practice including ENT, respiratory, cardiology, gastroenterology, ophthalmology, and dermatology		●						●
	Immediate management of common musculoskeletal injuries		●						

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	Referral procedures to secondary services					●	●		
	Indications and contraindications for exercise in healthy population and those with medical conditions	●						●	●
	Challenges facing deprived communities and ethnic minorities					●			●
	Effects of medications on exercise tolerance	●						●	●
	Understanding of community physiotherapy services						●		●
S	Basic examination skills of all systems		●						
	Basic history taking		●						
	Basic counselling skills		●						
	Exercise prescription and understanding of GP referral schemes					●		●	
E	During F1/2 and HST a minimum of 6 months in general practice – inner city base ideal								●
	Attendance at appropriate courses such as counselling skills and family planning							●	●
2-B: Population Health									
K	Physiology of exercise and health	●						●	
	Essentials of epidemiology, overview of methods and designs Epidemiology of relevant diseases: e.g. CHD, diabetes, stroke							●	
	Theoretical basis of health promotion Working with and for communities Strategic leadership in promoting physical activity							●	
	Evidence in physical activity/health research Physical activity and effects on CHD, stroke, PVD, cancer(s), Diabetes, obesity, musculoskeletal health, metabolic syndrome, etc Physical activity as therapy in a range of chronic conditions Effective interventions to promote physical activity	●						●	
	Public health policy in physical activity and health Policy development Policy implementation							●	●

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	Services supporting the promotion of physical activity and their structures NHS Local authority Voluntary and private sector Collaborative working for physical health and well being Developing appropriate health programmes and services for Physical well being Quality of services within an evaluative culture							●	●
	Measuring physical activity, fitness and health in individuals and populations	●						●	
S	The ability to initiate a health screening programme.			●		●	●	●	
	Skills to provide practical guidance on setting up and managing an exercise programme for people with medical problems, as well as to deal with any technical or patient problems that may arise in such a programme			●				●	
	Undertaking a needs assessment for a target group of service			●		●		●	
	Appraising the evidence for the effectives of a physical activity health promoting programme or services							●	
	Examining the effectiveness of a relevant service							●	
	Develop and promote a physical activity programme for a given population						●	●	●
	Demonstrate an understanding of the relevant services and evidence of the ability to provide leadership and work collaboratively communicating with a range of different audiences' health promoting messages			●		●	●		
E	Six months Public Health experience – likely taken concurrently with General Practice as 12 month block.								●
	Trainees will be based in departments of public health and work collaboratively with relevant organisations and other professionals								●
	Media experience would be necessary								●
	Attendance at exercise rehabilitation sessions and community groups e.g. cardiac rehabilitation								●
2-C: Effect of Illness on Exercise Capacity									

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K	Understanding of medical conditions commonly encountered in the exercising population including mental illness, acute febrile illness, epilepsy (and other neurological conditions), diabetes, bleeding disorders, cancer, asthma and vasculopathic states.							●	
	Understanding of the effect that these conditions may have on the individual's ability to exercise, from both an exercise capacity and safety perspective							●	
	Understanding of the potential effect of medications prescribed for these conditions, on the individual's ability to exercise							●	
S	Ability to determine the status or severity of the disease state from history, examination and investigation.		●			●		●	
	Ability to provide clear and safe advice to the individual regarding exercise		●			●			
	Ability to recognise the need to consult with specialists in the treatment of specific conditions		●			●			
E	Exposure to clinics dealing with specific disease states								●
	Structured tutorials and lectures from experts in the treatment of specific disease states								●
Module 3 – Musculoskeletal Medicine									
3-A: General Pathology of the Musculoskeletal System									
K	Understanding of general musculoskeletal pathology which may present in athletes including; Malignancy Infection Inflammatory arthritis Connective tissue disorders Neuropathy, myopathy Degenerative joint disease Spinal Disorders, Developmental Disorders and Disorders of Childhood Metabolic and endocrine conditions	●							

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Understanding of the changes which may be detectable with medical imaging and pathology testing in such conditions	●							
S	Ability to take a thorough history and suspect non-traumatic pathology from atypical and 'red flag' features		●						
	Ability to detect key signs on clinical examination to suspect non-traumatic pathology		●						
	Ability to utilise pathology and medical imaging services to confirm or exclude non-traumatic pathology		●			●			
E	Attend rheumatology, pathology and endocrine clinics								●
	Attend lectures and seminars covering these conditions								●
	Attend Orthopaedic and Fracture Clinics								●
3-B: Management of Soft Tissue and Sports Injuries									
K	A. Injury Prevention Pre-participation screening (addressing risk factors, including biomechanical abnormalities) Evidence regarding warm-up and stretching Sports equipment, including protective equipment – health and safety pertinent to sport Safe preseason training regimes Targeted strength and conditioning programmes sport-specific individual-specific Training surface and shoes Rule changes in sport	●				●		●	

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	B. Acute Injury Management The principles of managing acute soft tissue injury – lacerations, sprains, strains, contusions, haematomas The principles of managing acute bone and joint injuries – dislocations, fractures, avulsion injury, epiphyseal injuries Understanding of the pathological process of soft tissue injury and the possible effects of common pharmacological treatments on this process	●	●	●		●		●	●
	C. Chronic/Overuse Injury management The principles of assessing, investigating and managing overuse injury	●			●	●	●		
	D. Principles of the conservative management of injury Principles of injury rehabilitation – ligament/tendon/muscle/bone/joint Multidisciplinary approach to rehabilitation Protected function and progressive functional approach to rehabilitation Preservation of cardiovascular fitness and role of cross-training Role of manual therapies in the management of soft tissue injuries The use of taping, splints, braces, orthotics. An understanding of the role of joint and soft tissue injections including their limitations and potential side effects. To appreciate the importance and potential for injury prevention	●	●	●		●	●	●	
	E. Principles of the surgical management of musculoskeletal injury					●	●		
	F. Thorough understanding of the principles of tissue injury and repair	●							
S	Management of acute injury to bone, joint and soft tissue.	●	●	●		●	●		
	The application of rehabilitation techniques					●	●		
	Joint and soft tissue injection techniques			●				●	

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E	Regular attendance at sports medicine clinics.								●
	Attachments with experienced sports physicians at a variety of sports events to appreciate the diverse nature of on field sports medicine and acute injury management								●
	Practical experience of the techniques utilised in acute and chronic injury management								●
3-C: Musculoskeletal Radiology									
K	The role of imaging techniques in general terms and the way in which images are produced.	●						●	
	An understanding of the relative radiation risks applicable to different types of imaging	●						●	
	The strengths and relative weaknesses of different imaging techniques and their ability to demonstrate both normal and abnormal structures within tendons, ligaments, muscles, bones and joints	●						●	
	A full appreciation of the role of imaging in investigating patients presenting to a team physician and sports medicine specialist. This will include the investigation of patients with both acute and chronic symptoms including acute traumatic injury and chronic overuse injury	●						●	
	The ability to construct a differential diagnosis based on history and clinical findings and the targeted use of imaging to reach a definitive diagnosis	●						●	
	An understanding of the use of medical imaging for targeted treatment (e.g. guided injections) to complement history & examination	●						●	
S	Ability to practice musculoskeletal ultrasound including practical experience of imaging normal and abnormal muscle (to differentiate traumatic lesions) and tendons commonly associated with Tendinopathy e.g. patella, Achilles (optional)		●	●				●	●
	An ability to interpret different modalities of medical imaging in a logical and structured manner, and in doing so identify significant pathology			●				●	
	Supervise injections utilising x-ray guidance		●	●				●	●

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
E	Working within a multidisciplinary sports medicine clinic with access to all modern imaging modalities						●		●
	Regular discussion with musculoskeletal/sports radiology colleagues								●
	Regular attendance at x-ray meetings								●
	Regular, supervised imaging-interpretation sessions in tutorials								●
	Attending musculoskeletal ultrasound sessions including those in which injections are given								●
	Complete a course of musculoskeletal ultrasound (optional, see Module 8)							●	●
3-D: Gait and Biomechanical Assessment									
K	Functional anatomy of joints and musculo-tendinous units	●							
	Characteristics of bone, tendon, ligament, articular cartilage, muscle under stress and strain and potential for fatigue	●				●			
	Human movement analysis – basic kinematics and kinetics							●	
	Biomechanical analysis of sport-specific techniques swimming throwing jumping kicking running boxing wrestling and martial arts	●						●	●

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	Performance aspects of sport-specific equipment racquets, bats throwing implements (balls, javelin, shot-put, discus) rowing boat, kayak, canoe sporting footwear bicycle golf clubs swimming suits protective equipment (headgear, body protection, etc) mats and playing surfaces	•						•	•
	Effects of faulty biomechanics, influence of posture		•					•	
	Methods and effects of changing biomechanics		•					•	
	Principles of body morphology ectomorphs, endomorphs, mesomorphs sport-specific, position-specific body composition assessment of body composition normal body composition	•						•	
S	To perform biomechanical analysis: standing moving sports specific		•	•					
E	Gait analysis clinics/teams Orthotic provision Report of one case involving biomechanical assessment, video analysis and multidisciplinary management Biomechanics experience with podiatrist / physiotherapy / biomechanist Attend workshops on orthotic construction					•			•

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Module 4 – Working within the team environment									
4-A: Team Physician									
K	The role of the team physician				●		●		
	Pre-participation screening Aims and challenges of pre-participation screening Justification for pre-participation screening Sport-specific pre-participation screening Screening components (questionnaire, history, examination, investigation)	●						●	
	Health education and pre-season assessment							●	
	Acquisition of skills and physique	●				●			
	Protective equipment	●						●	
	Medical equipment, pharmacy supplies required for coverage of teams					●	●		●
	Structuring training to prevent injury					●		●	
	Doping classes and methods/ permitted use of banned drugs/ doping control	●						●	
	Traveller's health issues, combating jet lag and immunisations	●				●			
	Athlete confidentiality and medico-legal aspects of team care	●				●			
	Disordered eating, female athlete triad	●				●			
	Child protection					●		●	
S	Communication skills Coaches/ athletes/ medical team/ media						●	●	
	Ability to prepare a medical team for travel				●	●	●		●
	Ability to monitor environment/ hygiene/ facilities					●			
	Ability to work both with individual athletes and a team				●		●		●
	Ability to undertake pre-hospital care of an injured athlete							●	
	Show adequate record keeping								●

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E	Supervised for minimum of 2 years as physician in team sporting environment								●
	Maintain a logbook of athletes and, teams and conditions seen								●
	Experience of travelling with a variety of teams								●
	Attend appropriate courses such as Advanced Life Support							●	
	Child protection course							●	
4-B: Event Physician									
K	Legislative and medico-legal guidelines with regard to medical and crowd safety facilities at sporting venues	●					●	●	
	Guidelines for number and type of medical personnel required for sporting events with large participant numbers and/or large crowds	●					●	●	
	Relevant EU safety legislation governing the running of sporting events with large participation numbers and/or large crowds	●					●	●	
	Procedures for evacuation of injured athlete or member of the crowd from any given sporting event	●					●	●	
	Procedures for evaluating requirements in terms of pharmacy supplies, medical equipment, medical personnel, paramedical personnel and communication equipment at any given sporting event	●				●			●
S	Lead medical team at a sporting event involving large participation numbers and/or large crowd numbers, such that medical coverage is sufficient and complies with relevant legislative and medico-legal requirements						●		●
	Evaluate requirements in terms of pharmacy supplies, medical equipment, medical personnel, paramedical personnel and communication equipment at any given sporting event	●					●		
	Establish protocols for evacuation of injured athlete and/or member of crowd from sporting event						●		
E	Assist with provision of medical services at sporting events with large participation numbers and/or large crowd numbers						●		●
	Attend courses and lectures regarding provision of medical services at such events							●	●
	Obtain and read documents relating to relevant legislative and medico-legal requirements								●

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4-C: Specific Sports									
K	Familiarity with a wide variety of sports in terms of rules and regulations, physiological requirements and injury risk profiles	●							●
	These sports to include; Football, Cricket, Rugby codes, Field hockey, Basketball, Netball, Swimming, Track and field events, Cycling, Rowing, Gymnastics, Triathlon, Water polo, Tennis, Squash and other racket sports, Martial arts, Wrestling, Boxing, Volleyball, Golf, Gaelic and other regional sports	●							●
S	Demonstrate a familiarity with the above sports with regards to rules and regulations, physiological requirements and injury risk profile								●
	Provide medical treatment for athletes involved in these sports				●		●		●
	Provide advice to team management regarding pre-participation screening, training programs, injury risk management and injury treatment, for any of these sports				●		●		●
E	Spend time with teams involved in these sports								●
	Attend appropriate courses relating to the care of athletes involved in these sports							●	●
Module 5 – Medical Emergencies									
5-A: Head injury and Concussion									
K	Pathophysiology of concussion	●						●	
	Various definitions of concussion	●						●	
	Grading concussion severity – historical perspectives	●						●	
	Understanding of possible significant complications	●						●	

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	Assessment of concussion On field retrieval - principles of immediate management 'Red flags' on history and examination Neuropsychological testing techniques, including computer-based	●						●	
	Understanding of short and long-term sequelae of concussion							●	
	Rehabilitation of concussed athlete							●	
	Rationale for return to play							●	
	Sport-specific regulations							●	
	Maxillofacial and dental issues							●	
S	Lead on field retrieval team and provide appropriate immediate management		X	X				●	
	Diagnose concussion on history, examination and neuropsychological testing							●	
	Clinically detect significant deterioration and provide appropriate management							●	
	Familiarity with neuropsychological testing techniques (including computer-based)					X		●	
	Provide safe and scientifically sound advice to athletes and team management regarding return to sport							●	
E	Medical coverage of contact sports where concussion prevalence is significant								●
	Tutorials, lectures updating evidence-based management of concussion								●
	REMO course (desirable) – see below							●	
5-B: Sudden Death in Sport									
K	Incidence and prevalence of sudden death in sport					●		●	
	Aetiology of sudden death in sport Age-related factors Sport-specific factors					●		●	

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	Cardiological causes, including HOCM Coronary artery anomalies Coronary artery disease Conduction abnormalities Structural derangements including valvular disease and Marfan's syndrome					●		●	
	Traumatic causes including Head injury Extracranial/maxillofacial pathology Intracranial pathology, raised intracranial pressure Diffuse and focal pathology Abdominal injury Chest injury							●	
	Environmental factors							●	
	Understanding of the role of pre-participation screening					●		●	
S	Implement strategies to reduce risk of sudden death in sport					●		●	
	Ability to identify at risk athletes through history, examination and appropriate investigation		●						
	Ability to manage athletes with known risk factors		●	●					
E	Provide coverage at contact sport events						●		●
	Attend cardiological testing sessions								●
	Read ECGs and identify relevant patterns of pathology							●	
	Observe echocardiograms								●
	Attend clinic specialising in connective tissue diseases, including Marfan's syndrome								●
	Successfully complete ALS, Pre-hospital Care Course, REMO or other approved course providing skills in resuscitation							●	
	Participate in pre-participation screening								●

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5-C: Resuscitation Training									
K	On field assessment including basic life support, advanced life support, shock, anaphylaxis, basic and advanced airway management, spinal immobilisation and principles of safe patient transfer.							●	
	Basic pharmacology of drugs used in resuscitation							●	
	Thorough understanding of the principles of care for the unconscious patient							●	
	Basic knowledge of the principles of trauma care							●	
	Principles of the management of spinal injury, head injury, thermal injury, chest and abdominal injury eye trauma, dental trauma and genitourinary trauma							●	
S	Ability to assess an accident scene optimise safety at accident scene for the injured and the rescue team							●	
	Cardiopulmonary resuscitation: both expired air resuscitation and external cardiac compressions							●	
	Competency in defibrillation: manual and automated external defibrillators							●	
	Basic airway manoeuvres: jaw thrust, chin lift, head tilt							●	
	Airway adjuncts: nasopharyngeal airways and oropharyngeal airways including sizing and indications for use							●	
	Advanced airway techniques: laryngeal mask airways, combitubes, endotracheal intubation							●	
	Needle thoracotomy							●	
	Needle cricothyroidotomy							●	
	Safe transfer onto spinal board							●	
	Log roll							●	
	Splinting of pelvic and lower limb fractures							●	
	Treatment of major open fractures							●	
E	Ambulance observer sessions								●
	Theatre sessions for airway management			●					●
	Accident and emergency sessions (3 months minimum)								●

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	Advanced life support status							●	
	Successfully complete ALS, Pre-hospital Care Course, REMO or other approved course providing skills in resuscitation							●	
5-D: Accident and Emergency									
K	Basic triage of injuries						●	●	
	Acute assessment and treatment of soft tissue injuries						●	●	
	Principles of basic fracture management						●	●	
	Knowledge of common fractures and dislocations in upper and lower limbs						●	●	
	Assessment and treatment of minor and major head injuries		X	X				●	
	Differential diagnoses in acute eye trauma		X	X				●	
	Differential diagnoses in acute ear, nose and throat trauma		X	X				●	
	Understanding of the principles and practice of local anaesthetic use including field and regional anaesthesia		X	X				●	
S	Common fracture manipulations: fingers and ankles		X	X				●	
	Reduction of common dislocations: shoulder, elbow, fingers, patella, ankle and toes		X	X				●	
	Skin and subcutaneous suturing		X	X				●	
	Examination of head and central nervous system to detect skull/ basal skull fractures and major intracranial pathology		X	X				●	
	Examination of external eye and retina		X	X				●	
	Examination of nose: recognition of septal pathology		X	X				●	
	Competency in use of sedation with thorough awareness of indications and contraindications		X	X				●	
	Familiarity of use of different local anaesthetics		X	X				●	
	Regional anaesthetic techniques: eye, axillary block, shoulder infiltration, femoral blocks, ankle blocks and ring blocks		X	X				●	
E	Minimum of 3 months of accident and emergency training in an approved centre								●

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Module 6 – Drugs in sport									
K	Understanding of effects of various pharmaceutical agents on exercise performance	●						●	
	History of Drugs in Sport	●						●	
	Banned substances/methods: Potential harmful side-effects of banned performance-enhancing substances/methods Procedures for obtaining accurate and current information regarding Drugs in Sport Legal implications for the doctor and the athlete Sport-specific patterns of abuse Sport-specific regulations regarding specific substances Medical exceptions Testing procedures, and the doctor's role in such procedures	●				●		●	
	Therapeutic use of drugs for illness and injury Pharmacology of NSAIDs Effects of therapeutic medications on injury healing Effects of therapeutic medications on exercise performance	●						●	
	Education of athletes and administrators – the doctor's roles & responsibilities			●				●	
	Regulatory authorities including government, IOC, WADA and individual sporting organisations	●				●		●	
S	Educate players and management regarding Drugs in Sport			●				●	
	Access current information regarding Drugs in Sport			●				●	
	Advise athletes regarding appropriate pharmacological treatment of medical conditions			●				●	
	Clinically suspect use of banned substances/methods							●	
	Adhere strictly to relevant government legislation and sporting regulations		●	●		●		●	

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	Provide appropriate support to the athlete during testing procedures		●	●				●	
E	Constantly review the latest information regarding Drugs in Sport								●
	Attend lectures, seminars provided by testing authorities								●
	Provide educational lectures to players and team management								●
	Attend and observe drug testing procedures								●
Module 7 – Psychosocial aspects of sport and exercise medicine									
K	Awareness of motor learning, selective attention and information processing theories and models							●	
	Psychology of behavioural change – sedentary to active living							●	
	Psychological aspects of stress, trauma, disability, rehabilitation, and failure in sport							●	
	Psychological aspects of motivation, arousal and performance							●	
	Group psychology: of team, coach, medical team, group dynamics, behaviour remodelling							●	
	Psychological/ mood effects of physical activity							●	
	Sociology of sport: including violence in sport, behavioural norm and values in sport, effect of sport and physical activity on socialisation, influence of role models, drug issues in sport							●	
	Psychosocial effects of retirement from sport							●	
S	Interpretation of the results of psychological, psychometric, social and vocational assessments							●	
	Counselling skills, including understanding of its benefits and limitations		●		●		●	●	
	Recognition of psychosocial influences on performance							●	
	Management of psychological effects of failure					●		●	

Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Management of multi-professional team including appreciation of the role of sports psychologist in group and individual performance				●		●	●	
	Recognition, assessment and counselling of athletes with suspected eating disorders		●			●		●	
E	Working with a sports psychologist on an individual and group basis, in training, pre-competition and competition environment					●	●	●	
	Management of athletes with psychological problems due to failure and social problems					●	●	●	
	Experience with psychologist working in community exercise programmes							●	●
	Attendance of appropriate courses and meeting e.g. counselling course							●	●
Module 8 – Investigations and Procedures									
K	Knowledge of muscle and nerve physiology – the motor unit							●	
	Understanding of the methodology behind electrophysiological testing (NCS and EMG)							●	
	An understanding of the indications for electrophysiological studies and there strengths and weaknesses							●	
	Be able to describe the components of the normal EMG and NCS							●	
	Understanding of the EMG findings in denervated muscle, myopathy and inflammatory myositis							●	
	Be able to describe the three main types of nerve injury (neuropraxia, axonotmesis, and neurotmesis).							●	
	Thorough knowledge of muscle compartment anatomy, specifically related to possible complications of muscle compartment pressure testing	●		●		●			
	Joint anatomy, specifically related to possible complications of aspiration/injection of joints	●		●		●			●
	Principles of lower limb biomechanics and the use of orthotics		●	●		●		●	
	Principles and techniques of musculoskeletal ultrasonography		●	●		●		●	●

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
S (mandatory)	Perform lower limbs biomechanical assessment and construct basic foot orthotics, as appropriate		●	●		●		●	
	Safely inject major joints including shoulder, elbow, knee and ankle			●				●	
	Safely perform compartment pressure tests for the four major compartments of the lower leg			●				●	
S (optional)	Perform EMG and nerve conduction studies			●					●
	Perform cardiological stress testing			●					●
	Perform injections with and without x-ray guidance of other joints including zygo-apophyseal, hip, sacroiliac, wrist etc			●					●
	Perform ultrasound examination for common musculoskeletal conditions			●					●
E	Attend clinics where lower limb biomechanical assessment and orthotics construction are undertaken								●
	Attend workshops on construction of foot orthotics								●
	Attend clinics where EMG and NCS testing is performed								●
	Attend clinics where muscle compartment pressure testing is performed								●
	Attend joint injection workshops							●	●
	Attend cardiology clinics where exercise stress testing is performed							●	●
	Complete formal course of instruction in musculoskeletal ultrasonography where appropriate qualification is gained (optional)							●	●
Module 9 – Spinal injuries, amputee rehabilitation and disability sport									
K	Awareness of the special needs of disabled athletes and exercisers e.g. cerebral palsy, amputees, visually and hearing impaired, learning difficulties etc					●		●	
	Awareness of the special medical needs of disabled athletes and exercisers e.g. knowledge of catheters, pressure sores, stump care etc					●		●	

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Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Have an understanding of the physical problems experienced by amputees and wheelchair users with everyday living and with respect to sport					●		●	
	Have knowledge of the types of prosthesis available, particularly those used for sport					●		●	
	Have knowledge of the types of wheelchair available and adaptations required for different sports					●			
	Awareness of support groups and sports organisations for disabled people					●		●	
	Knowledge of the effects of spinal injury at different vertebral levels					●		●	
	Awareness of disability classification and relevant competition rules and regulations – Special Olympics, Paralympics Associations					●		●	
S	Learn how to prescribe prostheses, orthoses, wheelchairs and other assistive devices		●	●		●		●	
	Assessment of injuries in disabled athletes		●					●	
	Recognition and treatment of autonomic dys-reflexia		●					●	
E	Work with members of the multi-professional team, including physiotherapists, engineering and technical staff in assessment of disabled patients for equipment and exercise needs								●
	Work with disabled sports teams and British Paralympic Association								●
	Gain additional experience, in spinal unit or equivalent, of management of acute and chronic spinal injured patients/ amputees								●
Module 10 – Physical activity in special groups									
K – women	Understanding on the effect of hormone cycles on performance	●				●			
	Understanding the effects of exercise on the menstrual cycle	●				●			
	Principles of manipulation of menstrual cycle	●				●			
	Contraception options for athletes and the relevant merits & disadvantages in relation to performance	●				●			

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Understanding of the relationship between hormones, weight, osteoporosis and stress fractures in female athletes	●				●			
	Relationship between pregnancy and exercise, in terms of both safety and performance	●	●			●			
	Principles of return to exercise postpartum	●	●			●			
	Understanding of gender differences in exercise	●				●			
K – older athletes	Understanding of the effect of ageing on muscle bulk, cardiovascular fitness, endurance etc	●				●			
	Knowledge of considerations when exercising with chronic diseases, and the effect of chronic diseases on performance	●				●			
	Understanding of the risks and benefits of exercise in older people	●				●			
	Knowledge of the effect of medications e.g. beta-blockers on exercise capacity	●				●			
	Knowledge of exercise prescription	●						●	
K – children	Anatomical and physiological differences of the child and adolescent, in relation to the management of injury and illness	●							
	Paediatric musculoskeletal injuries: epiphyseal plate injuries, traction apophysitis, common fractures and specific soft tissue injuries	●			●	●			
	An understanding of non-accidental injury in all its forms, to include an appreciation of child protection issues and the relevant laws	●				●			
	Understanding of Gillick competency and the legality of treating minors	●				●			
	Basic knowledge of metabolic diseases encountered in children	●	●						
	Understanding and knowledge of the principles of pre participation screening in children, with particular emphasis on cardiology screens for HOCM	●						●	
	Diagnosis and treatment of exercise induced asthma in childhood	●	●			●			
	Application of appropriate training workloads to the developing skeleton and metabolism	●				●			
	Identification of common eating and body perception disorders in the developing athlete, with particular reference to amenorrhoea (primary and secondary) and the female athlete triad	●	●			●			

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
S – women	Ability to advise re: contraception including removal of coils etc training through pregnancy return to sport after pregnancy		●	●		●		●	●
	Appropriately investigate athletes with menstrual problems and treat accordingly		●			●		●	
S – older people	Medically assess older people wanting to participate in sport: elite athletes, recreational exercisers and new exercisers for potential risk factors		●			●			
	Provide appropriate exercise prescription for the elderly athlete			●		●		●	
	Prescribe appropriate levels of activity in older people with chronic diseases					●		●	
S - children	Identification and assessment of the sick child		●				●		
	Interpretation of paediatric X-rays and scans		●						
	Competency in examination of the paediatric skeleton		●	●					
	Ability to take an effective adolescent psychiatric history		●			●			
E – women	Work with female athletes and teams								●
	Involvement in gynaecology, antenatal, postnatal clinics in hospital or general practice setting								●
	Experience of contraception prescribing e.g. in general practice +/- Family planning certificate/courses								●
E – older people	General training in adult medical specialities e.g. respiratory medicine, cardiology		●						●
	Experience in basic ECG reading and exercise testing (see cardiology section)		●	●				●	●
E – children	Attachment to adolescent squad in a designated sport (gymnastics, swimming, diving, trampolining)								●
	Child protection course							●	
	Clinic and A&E specific experience								●

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Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
Module 11 – Research statistics and audit									
K	Ethics of clinical research							●	
	Types of study design – experiments, observational, controlled, single case							●	
	Principles of statistics, trial design, randomisation and techniques of data analysis							●	
	Epidemiology of sports injuries and health problems associated with exercise							●	
	Principles of conducting an audit: Objectives Design Implementation Reporting of results Interventions							●	
S	To be able to read scientific and clinical and other relevant papers and reports critically					●	●	●	
	To be able to evaluate the evidence presented in papers, literature reviews and meta-analysis						●	●	
	To report research findings in written papers and at meetings							●	
	To design and implement a clinical audit							●	
	To incorporate research findings into clinical practice							●	
	To take the appropriate action arising from the clinical audit							●	
	To supervise a research a project							●	●
	To demonstrate an ability to design research								●
E	Participating in training in research methods and statistics							●	●
	Undertake regular 6 monthly clinical audit projects								●
	Laboratory techniques relevant in Sport and Exercise Medicine							●	●
	Analysing data by appropriate means					●			●
	Presenting the results in a paper and at meetings, so that the research is subjected to peer review								●

Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
Module 12 – Teaching and presentation skills									
K	Principles of presentation construct			●				●	
	Principles of customising information presentation to groups of varying levels of medical understanding (athletes, trainers, allied health professionals, other Sport and Exercise Medicine specialists etc)			●				●	
	Familiarity with commonly used software packages for presenting information			●				●	
S	To be able to present educational information to audiences in a confident and competent manner			●				●	●
	To be able to effectively tailor a presentation to the level of medical understanding of a specific audience			●				●	●
	To be competent with using industry standard presentation software packages							●	
E	Regular presentation of Sport and Exercise Medicine knowledge to community groups, athletes and other medical professionals			●					●
	Presentation (case history, literature review, research update) at Sport and Exercise Medicine conference on an annual basis: regional, national and international (preferred)			●					●
	Attendance at formal teaching courses and workshops							●	●
Module 13 – Sports medicine management									
K	Principles of personal effectiveness/ time management						●	●	●
	Principles of business planning and marketing strategy							●	●
	Understanding of IT in medical practice and potential for enhancing practice efficiency							●	●

Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Human Resources Issues: Staff recruitment - person specification, job description, interview technique, equal opportunities Staff contracts Staff development, appraisal Disciplinary procedures, complaints procedures							●	●
	Principles of good communication, counselling		●	●	●		●	●	●
	Principles of good teamwork - group dynamics, leadership techniques, conflict resolution, motivation, promotion of team identity				●			●	●
	Ability to work effectively within multidisciplinary teams around athletes and exercisers - physiotherapists, sports scientists, osteopaths, chiropractors, coaches and others		●	●	●		●	●	●
	Principles of effective financial accounting, planning, policy development and budgeting: Organisation of the NHS Role of health authorities NHS reforms Funding health care for sport and individual exercisers Possibilities and limitations of care from the National Health Private sports medicine services Possibilities and limitations of care from the Private Sector and Voluntary Sector (St Johns, Red Cross, St Andrews)							●	●
	Organisations within the medical profession: GMC, Royal Colleges, (JCHMT and SAC), FSEM, PMETB, BMA Specialist societies - BASEM, UKADIS Professions allied or groups supplementary to medicine - physiotherapy, nursing, orthotists, biomechanists, sports scientists, psychologist, nutritionists							●	●
	Clinical Governance						●	●	
	Appraisal						●	●	●

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Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Principles of planning and running a formal meeting with emphasis on formal structure of the meeting			●				●	
S	To communicate effectively – verbal, written		●	●	●		●		
	To write good medical records and reports		●	●	●		●		
	To promote activity in the general population					●			
	To employ and encourage methods to prevent injury in athletes		●	●		●			
	To contribute to professional education for: medical undergraduates and postgraduates other health care personnel others working in sports - athletes, coaches, sports scientists						●		●
	To plan and manage own continuing professional development						●		●
	To participate effectively in committees						●		●
	Ability to plan and implement a formal meeting, adhering to formal requirements of accountability						●		●
E	Preparing business plans and proposals								●
	Staff recruitment process								●
	Staff appraisal				●				●
	Study annual accounts and budget								●
	Fund raising								●
	Health care systems for sports or individual exercisers – NHS and private								●
	Various multidisciplinary teams in which Sports Physicians are involved								●
	Development of services for injured and unwell athletes								●
	Contribution to public health policy development aimed at increasing participation in sport and physical activity								●
	Participation in committees with experience of chairing and secretarial roles								●
Module 14 – Ethical and medico-legal									

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Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
aspects									
K	Relevant EU legislation and medico-legal guidelines					●		●	
	Legislation regarding patient confidentiality					●		●	
	Legislation regarding keeping of medical records					●		●	
	Requirements for patient consent					●		●	
	Guidelines for dealing with minors and other potentially vulnerable individuals					●		●	
	Strategies utilised by media and other interested parties to gain information in breach of patient confidentiality					●		●	
	Privacy legislation					●		●	
	Regulatory bodies including IOC (sporting), BMA and WMA (medical)					●		●	
S	Abide by legislative and medico-legal guidelines					●	●	●	●
	Deal appropriately with minors and other potentially vulnerable individuals		●		●	●	●	●	
	Know when it is appropriate to have a chaperone present		●			●		●	
	Maintain legible and accurate medical records at all times			●	●		●	●	●
	Obtain patient consent where appropriate		●	●	●			●	
	Respect patient confidentiality and resist coercion by media and other interested parties		●	●				●	
	Abide by privacy legislation with regard to all individuals and parties							●	
E	Attend educational seminars relating to ethics and medico-legal obligations								●
	Deal with minors and other potentially vulnerable individuals under supervised conditions								●
	Observe others obtaining patient consent								●
	Act as chaperone for others								●
	Read information available and attend workshops on privacy legislation								●
Module 15 – Self-directed learning									
K	Objective understanding of own strengths and weaknesses in relation to Sport and Exercise Medicine training								●
	Potential resources for gaining further training in area of weakness or in area of special interest								●

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Assessment Blueprint for Sport and Exercise Medicine

Curriculum area	Competence	SEM Dip.	Mini-CEX	DOPS	PS	CbD	MSF	Course	Port
	Procedures for obtaining prospective approval of elective activities							•	•
S	Ability to identify and use appropriate resources (e.g. mentors) for objective feedback on strengths and weaknesses								•
	Ability to use information technology and medical networks to gain more information about potential elective activities								•
	Ability to design and implement elective activities while complying with procedures for Sport and Exercise Medicine training								•
E	Any activity which is considered beneficial for the trainees Sport and Exercise Medicine training, while complying with training procedures								•

Defining 'Competence'

Patients rightly expect doctors in training and specialists to demonstrate competence and professionalism in practice. Each specialty should be able to describe the core knowledge and skills, which together define that specialty, and explain how competence to practise is determined and measured. The purpose of competence-based training and education is therefore to define for a specific trainee "the knowledge, skills and attitudes required to undertake safe clinical practice at a level commensurate with stated objectives". Professional practice is also described as being "more than the performance of clinical skills, no matter how complex. It very importantly carries a built-in commitment to standards, and the attitudes which will maintain those standards throughout life." (Royal College of Anaesthetists' submission to the Specialist Training Authority 2000). This document therefore identifies the knowledge, skills and attitudes expected of doctors at various stages in their training in Sports and Exercise medicine, and provides guidance to trainees and trainers on methods of assessment. Trainers and trainees are expected to comply with the guidance of Good Medical Practice (GMC 1998). The Clinical Negligence Scheme for Trusts (CNST) has also stated a Criterion (9.2.6, October 1999) that '...there can be no assumption that a doctor in training will have acquired the specific skills necessary to adequately perform the duties of the post he/she fills. As the Senate of Surgery has said 'There should be no learning curve as far as patient safety is concerned' and (the CNST) support this view. From 1st October 1999 the CNST will require that all medical staff in training when taking up a new post are required to be given by their supervisor a list of the technical and professional skills they are expected to be able to perform. The trainees must demonstrated satisfactory performance. A supervised training programme must rectify any deficiencies in initial, or continuing,

competence. This emphasises the need for the assessment of competence and performance and the additional responsibility of documenting satisfactory achievement of training objectives.

Assessment

All trainees will be assessed regularly, with the assessments being recorded by the Record of in Training Assessment (RITA) process defined in the Guide to Specialist Registrar Training (February 1998) sections 11 and 12. Assessment will be structured around the competence-based curriculum that sets out the subject matter, knowledge, skills and experience required of trainees for HST in Sport and Exercise Medicine.

Assessments are designed to assist educational progress and fulfil the following purposes;

- To inform career selection and choice
- To confirm suitability of choice at an early stage of the training programme
- To demonstrate readiness to progress to the next stage of training, having met the required standard
- To provide feedback to the trainee about progress and learning needs
- To support trainees to progress at their own pace by measuring progress in achieving competencies for chosen career path
- To identify trainees who should change direction or leave medicine
- To enable the trainee to collect all necessary evidence for revalidation
- To assure the public that the trainee is ready for unsupervised practice
- To provide evidence for the award of a CCT
- To drive learning / CPD
- To gain membership or fellowship of relevant associations or organisations

Assessment will be structured to examine performance. A variety of assessment methods will be used to cover all of the areas of "Good Medical Practice". Such methods will include formative and summative assessment. The particular assessment methods employed will vary depending on which aspect of training is being assessed.

Examples of assessment methods and application to aspect of training, are outlined in the table below

Assessment Blueprint for Sport and Exercise Medicine

To test		Methods
Knowledge		• Computer-based assessment • Extended matching questions • Examination/written test/MCQs • Essays • Short answers
Skills:	Diagnostic and management skills	• As above • Direct observation e.g. MiniCEX
	Practical procedures	• Observed practice against established criteria (DOPS) • OSCE • Simulation - to be used where available and where procedures involve risk to patients
	History taking, examination, investigations and patient management	• Case notes review (CbD) • Multi source feedback • Clinical review • Grade cases • Observed ward rounds and clinics e.g. MiniCEX
Experience/attitudes:		• Informed by the opinions of other professionals (multisource feedback) • Direct observation/mini CEX • Videoing consultations and reflection

<u>For the purposes of assessment in SEM please note</u>:

1. MSF: refers to Multi-source feedback and includes trainer's report, regional STC lead report and reports from individual trainers during HST.

2. Mini-PAT: Peer assessment tool – provides feedback from a range of the trainee's co-workers, including consultants, GP principles, Public Health professionals, SpRs, fellow trainees, and experienced nursing or AHPs.
3. CbD: Case based discussion – includes cases and situations in SEM
4. PS: Patient Survey.
5. Other assessment tools may be used as deemed appropriate by individual supervisors and trainers – these assessment methods and tools should be discussed with Regional STC leads (and thus SAC SEM) before being widely used.