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# Sports and Exercise Medicine

## Higher Specialist Training Curriculum

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Faculty of Sports and Exercise Medicine (RCPI & RCSI)  
Training Committee

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## Glossary

AHP	Allied Health Professionals
CCST	Certificate of Completion of Specialist Training
CMO	Chief Medical Officer
DoHC	Department of Health and Children
FFSEM	Fellowship of the Faculty of Sports and Exercise Medicine
FSEM	Faculty of Sport & Exercise Medicine
IMC	Irish Medical Council
IABSEM	Intercollegiate Academic Board for Sports and Exercise Medicine
MDT	Multiple Disciplinary Team
MFSEM	Membership of the Faculty of Sports and Exercise Medicine
MICGP	Membership of the Irish College of General Practitioners
MRCPI	Membership of the Royal College of Physicians of Ireland
MRCSI	Membership of the Royal College of Surgeons in Ireland
SAC	Specialty Advisory Committee
SEM	Sports and Exercise Medicine
STA	Specialist Training Authority

### Copyright Acknowledgement

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# Competency-Based Training & Assessment

# **SPORTS AND EXERCISE MEDICINE**

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## **Foreword**

This document outlines the process of Higher Specialist Training (HST) for doctors wishing to specialise in the field of the Sports and Exercise Medicine. The document describes the body of knowledge which defines Sports and Exercise Medicine. The activities which will allow the trainee to acquire that knowledge and expected competencies are presented. The training programme is highly flexible, allowing individualisation based on response to the unique educational requirements of each trainee. Personal and professional development needs, career paths and goals will be addressed within the programme as part of the appraisal process.

Details of the appraisal and assessment process are provided along with examples of the required documentation. Original assessment reports should be kept centrally by the FSEM office, and be the property of the Training Committee with copies kept by the trainees. The trainee is responsible for ensuring compliance with provision of all necessary documents to the FSEM office ahead of each appraisal. The Training Records will be critical to the process of awarding CCST.

## **Background**

One of the great medical challenges is to reverse the slide towards a sedentary population. The technological advances seen over the past century have been labour-saving and time-saving. These same advances however have resulted in a population that is generally required to perform less physical activity than at any other stage in human existence. Medical conditions such as obesity, diabetes, hyperlipidaemia, osteoporosis, cardiovascular disease and mental illness can all be at least partially attributed to a sedentary lifestyle. Certainly exercise has been well proven to provide therapeutic benefit in each of these conditions. Studies demonstrate that those who exercise regularly are likely to contribute in a positive way to society. Children who exercise regularly are more likely to continue as exercisers and be successful at sport with its inherent benefits for self esteem, health and social skills.

While governments struggle under the burden of increasing health-care costs, there is a real need for proactive support structures for those who wish to exercise, as part of healthy living. Training in Sports and Exercise Medicine provides doctors with a specialised skill set which enables them to treat and encourage the exercising individual. Knowledge of the health benefits of exercise and of optimal exercise regimes for specific subgroups allows Sports and Exercise Medicine specialists to promote an active lifestyle to those groups who can benefit most.

Sports and Exercise Medicine Physicians require a broad range of clinical skills for dealing with medical illness in those who wish to exercise, as well as for treatment of musculoskeletal pathology.

Sports and Exercise Medicine now represents a distinct body of knowledge. There will always be common ground with other specialist areas of knowledge such as general practice, orthopaedics, emergency medicine, rheumatology, rehabilitation medicine, physiotherapy and neurology. Sports and Exercise Medicine physicians however have specialist training which is focused on the beneficial effects of exercise on health, and the effects that medical conditions have on the individual's capacity to exercise. Giving encouragement and assistance to individuals and groups in their endeavours to be active today, provides a holistic and effective means of addressing the population health challenges of tomorrow.

### **Entry Requirements**

Medical Practitioners who have completed an HST programme in another specialty and who have been awarded an MSc in Sports and Exercise Medicine may apply to enter the HST programme in Sports and Exercise Medicine for 2 years of flexible training.

### **Duration and Organisation of Training Programme**

The minimum duration of HST is 2 years, and must comprise supervised clinical training in posts approved by the Faculty of Sports and Exercise Medicine. It is essential that the trainee spend a period, equivalent to at least 1 year part time with a variety of sports teams under the supervision of an approved trainer. The construction of the programme will be flexible to ensure that trainees from different backgrounds complete the programme with a similar breadth of experience.

The programme to which the trainee is appointed will have named approved trainers (educational supervisors) for each element of the training programme and a Programme Director. HST in Sports and Exercise Medicine may provide experience in both the public health service and the private sector within approved clinics. The training will be overseen by Training Committee in SEM.

In keeping with guidelines provided by the Postgraduate Medical Education Training Board (PMETB), the curriculum provides:

- opportunities for self-directed learning
- regular feedback from educational supervisors and trainers to the trainee
- appropriate career advice and counselling
- processes for extra support
- processes for mediation and retraining

## **The Role of the Specialist in Sports and Exercise Medicine**

The Sports and Exercise Medicine specialist participates in a variety of activities and has a number of roles spanning primary and secondary care. While the training programme includes obligatory "core" knowledge and skills, the flexibility within the training programme allows the trainee to pursue areas of special interest. Sports and Exercise Medicine specialists will therefore have a variety of areas of special expertise to satisfy the diversity of needs within the community. Some of the roles which will be common to all Sports and Exercise Medicine specialists however will include the following;

### **Clinical**

- To take responsibility for providing accurate diagnosis for those individuals with injury or illness who would like to exercise, or for whom exercise would be beneficial.
- To provide leadership in providing clinical management of individuals with injury or illness.
- To provide a high level of clinical expertise and a professional standard of communication for clinicians referring patients for a professional opinion.
- To work closely with allied health professionals to ensure that the patient receives the highest level of clinical care and each stage of their treatment process.
- To work within the sporting environment to ensure a safe exercising environment for participants.
- To promote the highest level of ethical standards within the sporting environment by contribution to sporting organisations and teams.
- To provide an accurate diagnosis for exercise participants (of all standards) suffering from musculoskeletal injury.

### **Public Health**

- As part of a multi-disciplinary team encourage and promote physical activity as a lever for healthy living
- To identify impediments to an active lifestyle and work within a multi-disciplinary framework to remove those impediments or minimise their impact
- To work alongside local health authorities / public health clinicians/ PCTs in planning / developing exercise opportunities for the general public for health gain
- To liaise with local authorities / education / voluntary and private sector so as to advise on the health aspects of exercise programmes



### **Managerial**

- To establish courteous and respectful relationships with general practitioners and other clinicians for the betterment of patient care
- To work with specialists in other fields such as general practice, orthopaedics, rheumatology, emergency medicine, rehabilitation and neurology to further understanding of medical conditions affecting the active population
- To liaise with health authorities at all levels for provision of resources to promote increased physical activity for the general population in the interests of improved community health
- To establish liaison with other agencies such as social services, housing, education, unemployment, voluntary agencies and the private sector, involved in the provision of services to physically disabled people in the community
- To contribute to organisations which promote the dissemination of Sports and Exercise Medicine knowledge throughout the community for the betterment of community health and for the advancement of sport

### **Education and Research**

- To participate in regular clinical audit
- To promote original scientific research to develop and expand the understanding of Sports and Exercise Medicine
- To critically review scientific literature and apply evidence based principles to the practice of Sports and Exercise Medicine
- To actively participate in educational activities for children, community groups, sporting organisations, athletes and other medical professionals to promote an active lifestyle and to improve safety standards in sport
- To participate in approved training programmes in Sports and Exercise Medicine: foundation programmes, basic specialty training and higher specialty training.

These include:

1. **Good clinical care**
  - a) History, Examination, Investigations, Treatment (therapeutics) and Correspondence
  - b) Managing chronic disease
  - c) Time management
  - d) Decision-making
2. **Communication skills**
3. **Maintaining good medical practice**
  - Learning
4. **Maintaining trust**
  - a) Professional behaviour
  - b) Ethics and legal issues
  - c) Patient education and disease prevention
5. **Working with colleagues**
6. **Team working and leadership skills**
7. **Teaching**
8. **Research**
9. **Clinical governance**
  - a) Risk management
  - b) Evidence, audit & guidelines
10. **Structure and principles of management**
11. **Information use and management**
12. **Cross specialty skills**
  - a) Admissions and discharges
  - b) Discharge planning
  - c) Resuscitation
  - d) Nutrition

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**The role of the Specialist in Sports and Exercise Medicine**

1. **Sports and Musculoskeletal Medicine**
  - (i) Injury Prevention
  - (ii) Assessment and Treatment
  - (iii) Rehabilitation

2. **Exercise Medicine**

- (i) Prevention of multiple medical conditions, in particular, obesity, cardiovascular disease and diabetes.
- (ii) Treatment of multiple medical conditions, in particular cardiovascular disease and obesity
- (iii) Health and Lifestyle Promotion

3. **Medico-Legal Issues**

- (i) Sports litigation
- (ii) Player protection/physician liability

**Exercise Medicine Specialist**

Regular physical activity participation (PAP) has repeatedly been shown to have an important role in both the prevention and treatment (i.e. primary and secondary prevention) of numerous disease conditions which have potential to cause significant morbidity and mortality. These conditions include:

- Cardiovascular disease
- Coronary heart disease
- Hypertension
- Dyslipidaemias
- Obesity
- The metabolic syndrome
- Psychological illness
- Diabetes
- Arthritis
- Cancer
- Osteoporosis

In addition, PAP throughout adult life protects against many of the age-related decrements in key aspects of fitness (flexibility, strength and aerobic conditioning). These preventable decrements have a major impact on loss of independence (with all the attendant economic implications) in old age. At the other end of the age spectrum, it is established that healthy (and unhealthy) behaviours in childhood tend to persist into adulthood, hence the vital importance of promoting PAP in children.

**Injury Prevention and Rehabilitation**

Sports and Exercise Medicine physicians also lead the management of musculoskeletal and non-musculoskeletal aspects of sports medicine.

Common examples of these include:

- Return to play decisions in the sick or injured athlete
- Return to work decisions in injured patients
- Mild traumatic brain injury and other head injuries
- Chronic or acute illness of athletes, such as infectious mononucleosis, asthma or diabetes
- Nutrition, supplements, ergogenic aids and performance issues
- Exercise prescription for patients who want to increase their fitness
- Injury prevention
- Strength training and physical conditioning
- Healthy lifestyle promotion

## **Design and Delivery of Physical Activity Programmes for Patients with Specific Disease Conditions**

### **Physical Activity Clinics**

Many patients (categories outlined above) would benefit hugely from structured, supervised physical activity programmes. These include inpatients and outpatients. The Sports and Exercise Medicine Physician would lead multidisciplinary teams whose role would be to design, deliver, monitor and progress appropriate programmes. Most specialties (including cardiology, respiratory medicine, endocrinology, psychiatry, gastroenterology, orthopaedics, gerontology, obstetrics and paediatrics) would benefit.

### **Collaboration with Multidisciplinary Community Based Physical Activity Programmes**

This service would take the content and concepts from the hospital based physical activity clinics into the community and see a Sports and Exercise Medicine Physician having a key role in services such as:

- Phase IV Cardiac Rehabilitation
- Specialised obesity treatment centres
- Community based physical activity programmes for the elderly

### **Educational Programmes**

Sports and Exercise Medicine physicians will have an important role in designing and delivering educational programmes for health care professionals and members of the public in the area of physical activity.

*The requirements for the generic curriculum are outline in the tables overleaf.*

**Generic Skills and Attitudes pertaining to higher specialist training****1. GOOD CLINICAL CARE****A) HISTORY, EXAMINATION, INVESTIGATIONS, TREATMENT [THERAPEUTICS] & NOTEKEEPING SKILLS:**

Objective: To be able to carry out specialist assessment of patients by means of clinical history taking and physical examination and use of relevant treatments and investigations.

<b>Subject</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Attitudes</b>
<b>(i) History</b>	Define the patterns of symptoms found in patients presenting with disease.	Be able to take and analyse a clinical history in a relevant succinct and logical manner. Be able to overcome difficulties of language, physical and mental impairment. Use interpreters and advocates appropriately.	Show empathy with patients. Appreciate the importance of psychological factors of patients and relatives. Appreciate the interaction of social factors and the patient's illness.
<b>(ii) Examination</b>	Define the pathophysiological basis of physical signs. Define the clinical signs found in diseases.	Be able to perform a reliable and appropriate examination.	Respect patients' dignity and confidentiality. Acknowledge cultural issues. Appropriately involve relatives. Appreciate the need for a chaperone.
<b>(iii) Investigations including imaging</b>	Define the pathophysiological basis of investigations. Define the indications for investigations. Define the risks and benefits of investigations. Know the cost effectiveness of individual investigation.	Ability to interpret the results of investigations. Ability to perform investigations competently where relevant. Ability to liaise and discuss investigations with colleagues and to order them appropriately	Understand the importance of working with other health care professionals and team working. Show a willingness to provide explanation to patient as to rationale for investigations, and possible unwanted effects.
<b>(iv) Treatment (Therapeutics)</b>	Explain the scientific theory relating to Pharmacology and the pathophysiology of pain.	Ability to accurately assess the patients needs. Ability to initiate the appropriate prescription of analgesia, blood products and medication.	Show appropriate attitudes towards patients and their symptoms and be conscious of religious or other philosophical contexts particularly in the arena of blood products. Clearly and openly explain treatments and side effects of drugs.
<b>(v) Note keeping, letters etc</b>	Be able to write discharge summaries, discharge letters, outpatient letters, medico-legal reports. Use of email, internet and the telephone. Define the structure, function and legal implications of medical records & medico-legal reports. Know the relevance of the data protection pertaining to patient confidentiality & be familiar with	Record concisely, accurately, confidentially and legibly the appropriate elements of the history, examination, results of investigations, differential diagnosis and management plan. Date and sign all records.	Appreciate the importance of timely dictation cost effective use of medical secretaries and the growing use of electronic communication. Be aware of the need for prompt and accurate communication with primary care and other agencies. Show courtesy towards medical secretaries and clerical staff.

	GDPR requirements		
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**B) MANAGING CHRONIC DISEASE**

Objective: To be able to carry out specialist assessment and treatment of patients with chronic disease and to demonstrate effective management of chronic disease states

Subject	Knowledge	Skills	Attitudes
Management of chronic disease.	<p>Define the clinical presentation and natural history of patients with chronic disease.</p> <p>Define the role of rehabilitation services, pain control and palliative care.</p> <p>Define the concept of quality of life and how it can be measured.</p>	<p>Maintain hope whilst setting long term realistic goals.</p> <p>Develop long term management plans.</p> <p>Act as patient advocate in negotiations with support services.</p>	<p>Treating each patient as an individual.</p> <p>Appreciate the effects of chronic disease states on patients and their relatives.</p> <p>Develop and sustain supportive relationships with patients with chronic disease.</p> <p>Appreciate the impact of chronic disease on patients and their relatives.</p> <p>Appreciate the importance of co-operation with primary care.</p>

**C) TIME MANAGEMENT AND DECISION MAKING:**

Objective: To demonstrate that the trainee has the knowledge, skills and attitudes to manage time and problems effectively.

Subject	Knowledge	Skills	Attitudes
(i) Time management	Know which patients/tasks take priority.	<p>Start with the most important tasks.</p> <p>Work more efficiently as clinical skills develop.</p> <p>Recognise when he/she is falling behind and reprioritise or call for help.</p>	<p>Have realistic expectations of tasks to be completed by self and others.</p> <p>Willingness to consult and work as part of a team.</p>
(ii) Decision making	Understand clinical priorities for investigation and management.	Analyse and manage clinical problems.	<p>Be flexible and willing to change in the light of changing conditions.</p> <p>Be willing to ask for help.</p>

**2. COMMUNICATION SKILLS:**

Objective: Demonstrate effective communication with patients, relatives and colleagues in the circumstances outlined below.

<b>Circumstance</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Attitudes</b>
(i) Within a consultation	Know how to structure the interview to identify the patient's: concerns / problem list / priorities expectations understanding acceptance	<p>Listen.</p> <p>Use open questions followed by appropriate closed questions.</p> <p>Avoid jargon and use familiar language.</p> <p>Be able to communicate both verbally and in writing to patients whose first language may not be English in a manner that they understand.</p> <p>Use interpreters appropriately.</p> <p>Give clear information and feedback to patients and share information with relatives when appropriate</p> <p>Reassure 'worried well' patients.</p>	Demonstrate an understanding of the need for: involving patients in decisions offering choices respecting patients views dress and appearance should be appropriate to the clinical situation and patient sensibility
(ii) Breaking bad news	<p>Know how to structure the interview and where it should take place.</p> <p>Be aware of the normal bereavement process and behaviour.</p>	<p>Be able to break bad news in steps appropriate to the understanding of the individual and be able to support distress.</p> <p>Avoid jargon and use familiar language.</p> <p>Encourage questions.</p> <p>Maintain appropriate hope whilst avoiding inappropriate optimism.</p>	Act with empathy, honesty and sensitivity.
(iii) Complaints	<p>Have awareness of the local complaints procedures.</p> <p>Have an awareness of systems of independent review.</p>	<p>Manage dissatisfied patients / relatives.</p> <p>Anticipate potential problems.</p>	<p>Act with honesty and sensitivity and promptly.</p> <p>Be prepared to accept responsibility.</p>
(iv) Communication with Colleagues	Know: how to write a problem orientated letter & discharge summary to communicate with members of the MDT and when to phone a GP and when to phone a patient at home	<p>Use appropriate language.</p> <p>Select an appropriate communication method.</p>	Be prompt and respond courteously and fairly.



**3. MAINTAINING GOOD MEDICAL PRACTICE (Learning)**

Objective: To inculcate the habit of life long learning

Subject	Knowledge	Skills	Attitudes
Life long learning	Define continuing professional development.	Recognise and use learning opportunities. To use the potential of study leave to keep oneself up to date.	Be: - Self-motivated. - Eager to learn. Show: - Willingness to learn from colleagues. - Willingness to accept criticism.

## 4. MAINTAINING TRUST

### A) PROFESSIONAL BEHAVIOUR:

Objective: To ensure that the trainee has the knowledge, skills and attitudes to act in a professional manner at all times.

Subject	Knowledge	Skills	Attitudes
(i) Continuity of care	Understand the relevance of continuity of care.	Ensure satisfactory completion of reasonable tasks at the end of the shift/day with appropriate handover Documentation of/for handover. Make adequate arrangements to cover leave.	Recognise the importance of: <ul style="list-style-type: none"> <li>- Punctuality</li> <li>- Attention to detail.</li> </ul>
(ii) Doctor-patient relationship	Understand all aspects of a professional relationship. Establish the limiting boundaries surrounding the consultation. Deal with challenging behaviour in patients which transgress those boundaries, e.g. aggression, violence, racism and sexual harassment.	Help the patient appreciate the importance of cooperation between patient and doctor. Develop the relationship that facilitates solutions to patient's problems. Deal appropriately with behaviour falling outside the boundary of the agreed doctor patient relationship in patients, e.g. aggression, violence, sexual harassment.	Adopt a non-discriminatory attitude to all patients and recognise their needs as individuals. Seek to identify the health care belief of the patient. Acknowledge patient rights to accept or reject advice. Secure equity of access to health care resources for minority groups.
(iii) Recognises own limitations	Know the extent of one's own limitations and know when to ask for advice.		Be willing to consult and to admit mistakes.
(iv) Stress	Know the effects of stress Have knowledge of support facilities for doctors.	Develop appropriate coping mechanisms for stress and ability to seek help if appropriate.	Recognise the manifestations of stress on self & others.
(v) Relevance of outside bodies	Have an understanding of the relevance to professional life of: <ul style="list-style-type: none"> <li>- Colleges and Faculties</li> <li>- Medical Council of Ireland</li> <li>- Training Programme Director</li> <li>- Defence unions</li> <li>- Specialist Societies</li> </ul>	Recognise situations when appropriate to involve these bodies/individuals.	Be open to constructive criticism. Accept professional regulation.
(vi) Personal health	Know of occupational health services. Know of one's responsibilities to the public. Know not to treat oneself or one's family.	Recognise when personal health takes priority over work pressures and to be able to take the necessary time off.	Recognise personal health as an important issue.

**B) ETHICS AND LEGAL ISSUES:**

Objective: To ensure the trainee has the knowledge and skills to cope with ethical and legal issues which occur during the management of patients with general medical problems.

Subject	Knowledge	Skills	Attitudes
(i) Informed consent	Know the process for gaining informed consent How to gain consent for a research project	Give appropriate information in a manner patients understand and be able to gain informed consent from patients  Appropriate use of written material	Consider the patient's needs as an individual
(ii) Confidentiality	Be aware of relevant strategies to ensure confidentiality. Be aware of situations when confidentiality might be broken	Use and share all information appropriately Avoid discussing one patient in front of another Be prepared to seek patients wishes before disclosing information	Respect the right to confidentiality.
(iii) Legal issues, particularly those relating to: - death certification - role of the Coroner - mental illness - advance directives and living wills	Know the indications for section under the mental health act. Know the conditions that patients should report Know responsibilities in serious criminal matters. Understand the Civil Procedures rules	Able to obtain suitable evidence or know whom to consult if in doubt.	Show attention to detail and recognise pressures of time. Respect living wills and advance directives. Act with compassion at all times.

**C) PATIENT EDUCATION AND DISEASE PREVENTION:**

Objective: To ensure that the trainee has the knowledge, skills and attitudes to be able to educate patients effectively.

Subject	Knowledge	Skills	Attitudes
(i) Educating patients about: disease, investigations & therapy	Know investigation procedures including possible alternatives /choices. Be aware of strategies to improve adherence to therapies.	Give information to patients clearly in a manner that they can understand including written information. Encourage questions. Negotiate individual treatment plans including action to be taken if patient deteriorates or improves.	Consider involving patients in developing mutually acceptable investigation plans. Encourage patients to access: further information patient support groups
(ii) Environmental & lifestyle risk factors	Understand the risk factors for disease including: Diet, exercise, social deprivation, occupation, substance abuse, and behaviour	Advise on lifestyle changes. Involve other health care workers as appropriate.	Suppress any display of personal judgement.
(iii) Smoking	Effects of smoking on health Implications of addiction Smoking cessation strategies	To be able to advise on smoking cessation and supportive measures. Identify 'ready to quit' smokers.	Consider the importance of support during smoking cessation.
(iv) Alcohol	Understand the effects of alcohol on health and psychosocial well-being. Know of local support groups /agencies.	Advise on drinking cessation.	Suggest patient support groups as appropriate. Suppress any display of personal judgement.
(v) Illicit Drugs	Know the effects of common illicitly taken drugs. Legislation and Support Services. What to do if a patient takes an overdose of drugs. Know about Doping in Sport	Be able to use detoxification services. Understand prevention policies and liaise with psychiatric services. Deal with other prevention and liaison services.	Provide sympathetic help. Suppress any display of personal judgement.
(vi) Epidemiology & screening	Know the methods of data collection and their limitations. Know diseases that are notifiable. Know principles of primary and secondary prevention & screening.	Assess an individual patient's risk factors. Encourage participation in appropriate disease prevention or screening programmes.	Consider the: positive & negative aspects of prevention importance of patient confidentiality Respect patient choice.
(vii) Health promotion	Understanding of health promotion and methods	Working with other sectors, local authority, education etc.	Appreciate the role of health promotion within the broad framework of SEM

**5. WORKING WITH COLLEAGUES:**

Objective: To demonstrate good working relationships with Colleagues

Subject	Knowledge	Skills	Attitudes
(i) Interactions between: Hospital & GP Hospital & other agencies e.g. social services Medical and surgical specialties	Know the roles and responsibilities of team members. Know how a team works effectively. Know the roles of other clinical specialties and their limitations. Know the role of surgery and its limitations.	Delegate, show leadership and supervise safely Be able to communicate effectively. Handover safely. Seek advice if unsure. Recognise when input from another specialty is required for individual patients. Be able to work effectively with GPs, other medical and surgical specialists and other healthcare professionals.	Show respect for others opinions. Be conscientious and work co-operatively. Respect colleagues, including non medical professionals, and recognise good advice. Recognise own limitations.

**6. TEAM WORKING & LEADERSHIP SKILLS**

Objective: To demonstrate the ability to work in clinical teams and to have the necessary leadership skills

Subject	Knowledge	Skills	Attitudes
Clinical teams. Respect others opinion Effective leadership skills	Roles & responsibilities of team members. How a team works. Ensuring colleagues understand the individual roles and responsibilities of each team member. Own professional status and speciality Acknowledge of the field. The capacity to perceive the need for action and initiate that action	Respect skills and contribution of colleagues to be conscientious and work constructively. Respect for others opinion. To recognise your own limitations Objective setting; Lateral thinking; Planning; Motivating; Organising; Setting example; Negotiation skills.	Recognise own limitations. Enthusiasm; integrity; courage of convictions; imagination; determination; energy; and professional credibility.

**7. TEACHING AND EDUCATIONAL SUPERVISION:**

Objective: To demonstrate the knowledge, skills and attitudes to provide appropriate teaching, learning and assessment opportunities

Subject	Knowledge	Skills	Attitudes
(i) To have the skills, attitudes and practices of a competent teacher	Identify adult learning principles. Identify learner needs. Structure of a teaching activity. Varied teaching strategies. Identify learning styles. Principles of evaluation.	Facilitate learning process. Identify learning outcomes. Construct educational objectives. Design and deliver an effective teaching event. Communicate effectively with the learners. Use effective questioning techniques. Teach large and small groups effectively. Select and use appropriate teaching resources. Give constructive effective feedback. Evaluate programmes and events Use different media for teaching that are appropriate to the teaching setting.	Demonstrate a willingness and enthusiasm to teach. Show respect for the learner. Demonstrate a professional attitude towards teaching. Show commitment to teach. Demonstrate a learner centred approach to teaching.
(ii) Assessment	Know the principles of assessment Know different assessment methods Define formative and summative assessment	Use appropriate assessment methods Give constructive, effective feedback	Be honest and objective when assessing performance.
(iii) Appraisal	Know the principles of appraisal Know the structure of the appraisal interview	Conduct effective appraisals	Show respect for the person being appraised

**8. RESEARCH (\*)**

Trainees are encouraged to undertake a period of full time research and have a good knowledge of research methodology. There should be active involvement with research projects throughout the training period.

Subject	Knowledge	Skills	Attitudes
To be able to plan and analyse a research project.	Know how to design a research study. Know how to use appropriate statistical methods. Know the principles of research ethics. Know how to write a scientific paper. Sources of research funding.	Undertake systematic critical review of scientific literature. Ability to frame questions to be answered by a research project. Develop protocols and methods for research. Be able to use databases. Be able to accurately analyse data. Be able to write a scientific paper. Have good written and verbal presentation skills.	Demonstrate curiosity and a critical spirit of enquiry. Ensure patient confidentiality. Demonstrate knowledge of the importance of ethical approval and patient consent for clinical research. Humility.

*(\*) Research will be covered as part of the MSc SEM (entry requirement on HST SEM programme), in addition to any other Research & Academia work previously undertaken by the trainee.*



**9. CLINICAL GOVERNANCE**

**Objective:** Demonstrate an understanding of the context, the meaning and the implementation of Clinical Governance.

Subject	Knowledge	Skills	Attitudes
<p>(i) The organisational framework for Clinical Governance at local, health authority and national levels.</p> <p>Understanding of the benefits a patient might reasonably expect from clinical Governance.</p> <p>Creating an environment where mistakes and mismanagement of patients can be openly discussed and learned from</p>	<p>Define the important aspects of Clinical Governance.</p> <p>Medical and clinical audit.</p> <p>Research and Development.</p> <p>Integrated care pathways.</p> <p>Evidenced based practice.</p> <p>Clinical effectiveness.</p> <p>Clinical risk systems.</p> <p>To define the procedures and the effective action when things go wrong in own practice or that of others.</p> <p>Complaints Procedures.</p>	<p>Be an active partaker in clinical governance.</p> <p>Be able to undertake medical and clinical audit.</p> <p>Be actively involved in audit cycles.</p> <p>Be active in research and development.</p> <p>Critically appraise medical data research. Practice evidence based medicine.</p> <p>Aim for clinical effectiveness (best practice) at all times.</p> <p>Educate self, colleagues and other health care professionals.</p> <p>Be able to handle and deal with complaints in a focused and constructive manner.</p> <p>Learn from complaints.</p> <p>Develop and institute clinical guidelines and integrated care pathways. Be aware of advantages and disadvantages of guidelines.</p> <p>Report and investigate critical incidents.</p> <p>Take appropriate action if you suspect you or a colleague may not be fit to practice.</p>	<p>Make the care of your patient your first concern.</p> <p>Respect patient's privacy, dignity and confidentiality.</p> <p>Be prepared to learn from mistakes, errors and complaints.</p> <p>Recognise the importance of team work.</p> <p>Share best practice with others.</p>
<p>(ii) Risk management</p>	<p>Knowledge of such matters as Health and Safety policy, policies on needle stick injuries, note keeping, communications and staffing numbers.</p> <p>Knowledge of risk assessment, perception and relative risk</p> <p>Know the complications and side effects of treatments.</p>	<p>Confidently and authoritatively discuss risks with patients and to obtain informed consent.</p> <p>Able to balance risks and benefits with patients.</p>	<p>Willingness to respect and accept patients views and choices</p> <p>Willingness to be truthful and to admit error to patients, relatives and colleagues.</p>
<p>(iii) Evidence</p>	<p>Know &amp; understand the:</p> <p>principles of evidence based medicine</p> <p>types of clinical trial</p> <p>types of evidence</p>	<p>Able to critically appraise evidence.</p> <p>Ability to be competent in the use of databases, libraries and the internet.</p> <p>Able to discuss the relevance of evidence with individual patients</p>	<p>Display a keenness to use evidence in the support of patient care and own decisions therein.</p>

(iv) Audit	Know & understand: the audit cycle data sources data confidentiality	Involvement in on-going audit. Undertake at least one audit project	Consider the relevance of audit to: benefit patient care clinical governance
(v) Guidelines	Know the advantages and disadvantages of guidelines Methods of determining best practice	Ability to utilise guidelines Be involved in guideline generation, evaluation, review and updating.	Show regard for individual patient needs when using guidelines Willingness to use guidelines as appropriate

**10. STRUCTURE OF THE HSE AND THE PRINCIPLES OF MANAGEMENT**

Objective: To display knowledge of the structure and organisation of the HSE nationally and locally.

<b>Subject</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Attitudes</b>
Structure of the HSE, Department of Health, and the principles of management	Know the structure of the Health Services Executive. Know the local Trusts structure including Chief Executives, Medical Directors, Clinical Directors and others. Know the role of postgraduate training bodies, specialist societies, the royal colleges and the Irish medical council. Know finance issues in general in the Health Service, especially budgetary management. Know of the health regulatory agencies	Develop skills in managing change and managing people. Develop interviewing techniques and those required for performance reviews. Be able to build a business plan.	Show an awareness of equity in health care access and delivery. Demonstrate an understanding of the importance of a health service for the population. Show respect for others, ensuring equal opportunities.

**11. INFORMATION USE AND MANAGEMENT**

Objective: Demonstrate competence in the use and management of health information

<b>Subject</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Attitudes</b>
To demonstrate good use of information technology for patient care and for own personal development.	<p>Define how to retrieve and utilize data recorded in clinical systems.</p> <p>Demonstrate an understanding of the range of possible uses for clinical data and information and appreciate the dangers and benefits of aggregating clinical data.</p> <p>Define the main features, responsibilities and liabilities in Ireland and Europe pertaining to confidentiality</p>	<p>Define how to undertake searches and access web sites and health related databases.</p> <p>To apply the principles of confidentiality and their implementation in terms of clinical practice in the context of information technology.</p>	<p>Demonstrate the acquisition of new attitudes in patient consultations in order to make maximum use of information technology.</p> <p>Demonstrate appropriate techniques to be able to share information on computer with the patient in a constructive manner</p> <p>Adopt proactive and enquiring attitude to new technology.</p>

**12. CROSS-SPECIALTY TOPICS****A) ADMISSIONS AND DISCHARGES**

Objective: To provide the trainee with the knowledge and skills to be able to safely manage the general medical 'take'.

Subject	Knowledge	Skills	Attitudes
(i) 'Take' management	<p>Medical indications for urgent investigation and therapy</p> <p>Skills and capabilities of members of the 'on-take' team</p> <p>When to seek help or refer to other specialties</p> <p>Knowledge of support available in the community</p>	<p>Ability to prioritise</p> <p>Interact effectively with other health care professionals</p> <p>Keep patients and relatives informed</p> <p>Receive referrals appropriately</p> <p>Cope with stress</p> <p>Delegate effectively and safely</p> <p>Keep an accurate patient list</p> <p>Handover safely with appropriate documentation</p>	<p>Sympathetic handling of acutely ill patients.</p> <p>Aware of the pressures on other members of staff.</p>

**B) DISCHARGE PLANNING**

Objective: To provide the trainee with the knowledge and skills to be able to plan difficult discharges for patients, particularly the elderly.

Subject	Knowledge	Skills	Attitudes
Discharge planning	<p>Impact of physical problems on activities of daily living.</p> <p>Roles and skills of members of the multidisciplinary team including nurses, OTs, Physios, speech therapists and psychologists discharge co-ordinators and social workers.</p> <p>Available support in primary care.</p>	<p>Recognise when in-patient care is not required</p> <p>Effective contribution to discharge planning meetings.</p> <p>Liaison and communication with patient, family and primary care.</p> <p>Write reports for appropriate bodies.</p>	<p>Display empathy.</p> <p>Show an awareness of family dynamics and socioeconomic factors influencing success of discharge</p>

**C) RESUSCITATION**

Objective: To provide the trainee with the knowledge and skills to be able to recognise critically ill patients, take part in advanced life support, feel confident to lead a resuscitation team under supervision and use the local protocol for deciding when not to resuscitate patients.

Subject	Knowledge	Skills	Attitudes
(i) Recognise when a patient is critically ill.	Know how life threatening emergencies present and how to treat them.	Perform initial assessment Manage life threatening emergencies Recognise when to call for help from seniors or other specialties e.g. intensive care unit	Keep calm Recognise priorities. Recognise the dignity of patients. Keep relatives informed.
(ii) Advanced life support	Advanced life support algorithms. Role and side effects of commonly used anti-arrhythmics and cardiac support drugs.	Recognise cardiac arrhythmias. Perform emergency defibrillation. Perform emergency endo-tracheal intubation.	Display a calm and confident demeanour
(iii) Lead a cardiac arrest team	Role and responsibilities of the team leader.	Safe and effective communication and delegation	Be calm and realistic

**D.) NUTRITION**

Objective: To provide the trainee with the knowledge and skills in the nutritional issues listed below.

Subject	Knowledge	Skills	Attitudes
Sports nutrition	Nutritional requirements for Sport and Exercise Nutritional aspects of obesity, diabetes etc	Assessment of nutritional status and needs	To be alert to the specific nutritional needs of sport and exercise

# **CURRICULUM IN SPORTS AND EXERCISE MEDICINE**

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## **Research**

Conducting regular clinical audit is an essential part of HST in Sports and Exercise Medicine. Further original clinical research in Sports and Exercise Medicine is encouraged and expected, but not mandated. Trainees will be supported in attempts to publish quality research in peer-reviewed journals.

## **Assessment**

All trainees will be assessed regularly via a RITA process, in line with RCSI trainee performance appraisals. 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 aid the trainee by fulfilling 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 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 CCST
- 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

To test		Methods
<b>Knowledge</b>		<ul style="list-style-type: none"> <li>• Computer-based on-line assessments</li> <li>• Examination/written test/MCQs</li> <li>• Essays</li> <li>• Short answers</li> </ul>
<b>Skills:</b>	Diagnostic and management skills	<ul style="list-style-type: none"> <li>• As above</li> <li>• Direct observation e.g. Mini-CEXs</li> </ul>
	Practical procedures	<ul style="list-style-type: none"> <li>• Observed practice against established criteria (DOPS)</li> <li>• OSCE</li> <li>• Simulation - to be used where available and where procedures involve risk to patients</li> </ul>
	History taking, examination, investigations and patient management	<ul style="list-style-type: none"> <li>• Case notes review</li> <li>• Clinical review</li> <li>• Grade cases</li> <li>• Observed award rounds and clinics e.g. MiniCEX</li> </ul>
<b>Experience/attitudes:</b>		<ul style="list-style-type: none"> <li>• Informed by the opinions of other professionals (360° assessment)</li> <li>• Direct observation</li> <li>• CBD forms</li> <li>• Videoing consultations</li> </ul>

The simple conceptual model described by Miller (The Pyramid of Competence) identifies the essential components of clinical competence. It is the assessment of "does" -- that is, performance -- which is what the doctor does in real day-to-day practice, which is most important. On the basis of this concept there will be emphasis on direct observation, focusing on three attributes of real clinical performance: the clinical encounter, procedural skills, and behaviour and attitudes.



**The Pyramid of Competence**  
 (Miller GE. The assessment of clinical skills/competence/performance. *Acad Med* 1990;65:563-7)



## **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 practice is determined and measured. The purpose of competency-based training 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. It is required 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 skills they are expected to be able to perform. The trainees must indicate their competence to perform the specified tasks. A supervised training programme must rectify any deficiencies in initial, or continuing, competence’. This emphasises the need for the assessment of competence and the additional responsibility of documenting satisfactory achievement of training objectives.

## **Appraisal**

A formal process of appraisal will form an integral part of the training programme. Appraisal is designed to assist trainees and help prevent them from developing difficulties in training. The appraisal is the appraisee’s event with the following aims:

- To set out personal and professional development needs, career paths and goals
- To agree plans for the needs to be met
- To review the trainee’s performance
- To consider the doctor’s contribution to the quality and improvement of local healthcare services

The trainee will meet regularly with the educational supervisor to discuss the trainee’s current activities and progress to date. Educational needs will be identified. A strategy will then be devised for achieving educational goals in the future. The trainee will be supported in achieving these goals.

## **Description of Education Modules**

A description of each of the education modules follows;

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## **MODULE 1: SCIENTIFIC KNOWLEDGE**

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### **1-A: Exercise Physiology**

#### **Knowledge**

1. Origins and applications of exercise physiology basic and applied
2. Cellular metabolism and biomechanical pathways of energy production
  - Aerobic, anaerobic, intramuscular phosphate
3. Human energy transfer systems during exercise
  - Energy release from various sources including fats, carbohydrates, proteins
  - Substrate utilisation during exercise
4. Energy systems in exercise
  - Immediate and long term
  - Lactate transfer
  - VO<sub>2</sub> kinetics, oxygen lag/debt
5. Measurement/ energy costs of exercise
  - Basal metabolic rates
  - Calorimetry / daily energy expenditure
6. Cardiovascular response and adaptations to exercise
  - Blood pressure/ Cardiac output/ effects of training
7. Respiratory response and adaptations to exercise
8. Neuromuscular response to exercise
  - Motor units
  - Skeletal muscle structure/ function
  - Fibre types
9. Evaluating exercise metabolism / neuromuscular activity
10. Hormones and endocrine systems in exercise
11. Principles of training
  - Aerobic
  - Anaerobic
  - Adaptations to training
  - Training regimes
  - Maintenance and over- reaching
12. 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
13. 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
14. 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
15. Ergogenic aids
16. Genetics and exercise
17. The physiological/psychological basis of overtraining
18. Travel Medicine (scientific aspects of travel, e.g. circ rhythms)
19. Fatigue concepts

### **Skills**

1. Calculating energy utilisation
2. Estimating maximal oxygen consumption
3. Lung function testing
4. Isokinetic testing
5. Force measurement

### **Experience**

1. Work with exercise physiologist including involvement with environmental studies and physiological testing
2. Interaction with sports science and medicine team e.g. in elite sports team environment

## **1-B: Clinical Anatomy**

### **Knowledge**

1. Clinically relevant regional anatomy, including the upper limb, lower limb, groin & pelvis, head & neck, thorax and abdomen, cervical spine, thoracolumbar spine
2. Normal variations in anatomy and the relevance for injury risk, injury prevention and injury management
3. Surface anatomy
4. Functional anatomy

### **Skills**

1. Ability to relate anatomical knowledge to history taking and physical examination
2. Ability to relate anatomical knowledge to interpretation of medical imaging

### **Experience**

1. Regular tutorials with discussion of relevant anatomy
2. Exposure to clinical anatomy in supervised training posts
3. Review of anatomical knowledge at cadaver dissection sessions, as required

## **1-C: Nutrition and Exercise**

### **Knowledge**

1. Macronutrients and energy
  - Carbohydrate, fat, protein
  - Recommended daily allowances and nutrient sources
  - Calorific values and net energy values
2. Micronutrients
  - Vitamins
  - Vitamin supplementation
  - Minerals (and effect on exercise performance)
3. Hydration for Exercise
  - Water in the body
  - Fluid replacement during exercise
  - Fluid balance and exercise performance
4. Substrate utilisation during exercise
  - Principles of glucose, lipid and protein utilisation
  - Influence of diet on substrate utilisation
5. Diet and exercise in extreme environments
6. Body composition
  - Gross composition of human body
  - Body mass index
  - Methods of assessment
  - Health risks of different body types
7. Diet and health
  - Effect of diet and exercise on cardiovascular health
  - Effects of diet and exercise on development and management of diabetes
8. Obesity, exercise and weight control
  - Principles of energy balance
  - Exercise in obese individuals
  - Different diet regimes
  - Exercise and weight loss
9. Nutrition for exercise
  - Pre-competition
  - Carbohydrate intake before, during and after exercise
  - Children
10. Diet, glycogen stores and endurance
11. High fat diets and exercise

12. Protein and anabolic diets
13. Supplements
14. Alcohol and exercise performance
15. Disordered eating, bone health and female athlete triad

**Skills**

1. Calculation of calorific expenditure
2. Formulation and analysis of food diaries
3. Food weighing
4. Calculation of body composition
5. To advise on dietary requirements for different exercise conditions/ training regimes and supplement use

**Experience**

1. Working with nutritionist or state registered dietician
2. Working with sports teams alongside experienced supervisor
3. Working with patients with diabetes, obesity, cardiovascular disease e.g. in outpatient clinics

## **MODULE 2: POPULATION HEALTH**

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### **2-A: Primary Care**

#### **Knowledge**

1. Basic treatment options for common conditions seen in General practice including ENT, respiratory, cardiology, gastroenterology, ophthalmology, and dermatology
2. Immediate management of common musculoskeletal injuries
3. Referral procedures to secondary services
4. Indications and contraindications for exercise in healthy population and those with medical conditions
5. Challenges facing deprived communities and ethnic minorities
6. Effects of medications on exercise tolerance
7. Understanding of community physiotherapy services
8. General medical conditions that affect sports participants

#### **Skills**

1. Basic examination skills of all systems
2. Basic history taking
3. Basic counselling skills
4. Exercise prescription and understanding of GP referral schemes

#### **Experience**

A minimum of 6 months in emergency medicine

## **2-B: Health Benefits of Exercise**

This section will emphasise the benefits of exercise in primary and secondary disease prevention. Although exercise has proven benefits for a wide range of conditions particular emphasis will be placed on the role of exercise in cardiac disease, respiratory disease, osteoporosis, arthritis, hypertension, diabetes and mental health. To work with and advise other health promotion staff.

### **Knowledge**

1. An understanding of functional anatomy and physiology.
2. Epidemiology, aetiology and pathology of the aforementioned disease states.
3. An understanding of exercise physiology with an emphasis on the normal responses to training/exercise and the differences/similarities that are encountered in disease states.
4. An appreciation of the importance of exercise in the primary and secondary management of ischaemic heart disease, heart failure, hypertension, diabetes, peripheral vascular disease, osteoporosis, arthritis, respiratory disease and mental health – population health
5. Appreciation of the psychological aspects of ill health in the exercising individual.
6. An appreciation of the role of health screening programmes and their strengths and weaknesses in terms of minimising complications during exercise.
7. An understanding of the causes of sudden cardiac death (SADS) and how high risk individuals can be identified.
8. An understanding of the benefits of physical activity and exercise for mental health
9. Gerontology, i.e. understanding of effects of physical activity on determinants of independence/dependence (need for care/assistance) in elderly
10. Workplace exercise programmes

### **Skills**

1. The ability to initiate a health screening programme.
2. To safely prescribe exercise.
3. 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.
4. To organise and supervise cardiac rehabilitation.
5. To promote physical activity in the workplace and general community.
6. Educate and enable those most resistant to physical activity and exercise.

### **Experience**

1. 6 months experience in relevant specialties approved as part of the training programme
2. Trainees will be attached to clinics offering suitable experience of the management of cardiac, respiratory, musculoskeletal illness and diabetes.



3. Work collaboratively with public health and primary care colleagues to promote health benefits of exercise. Media experience useful.
4. Attendance at exercise rehabilitation sessions and community groups e.g. cardiac rehabilitation.
5. Attendance at clinics where regular exercise is used as an adjunct to other therapies in the treatment of mental illness.
6. Give educational talks to community groups, promoting the health benefits of exercise

## **2-C: Effect of Illness on Exercise Capacity**

### **Knowledge**

1. 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.
2. Understanding of the effect that these conditions may have on the individual's ability to exercise, from both an exercise capacity and safety perspective.
3. Understanding of the potential effect of medications prescribed for these conditions, on the individual's ability to exercise

### **Skills**

1. Ability to determine the status or severity of the disease state from history, examination and investigation.
2. Ability to provide clear and safe advice to the individual regarding exercise
3. Ability to recognise the need to consult with specialists in the treatment of specific conditions.

### **Experience**

1. Exposure to clinics dealing with specific disease states
2. Structured tutorials and lectures from experts in the treatment of specific disease states

## **MODULE 3: MUSCULOSKELETAL MEDICINE**

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### **3-A: General Pathology of the Musculoskeletal System**

#### **Knowledge**

1. 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

#### **Musculoskeletal and Regional Injuries Units**

1. Injury Definition / Classification
2. Damage and Repair
3. Injury Prevention
4. Injury Rehabilitation
5. History Taking
6. Diagnostic Imaging
7. Overuse Injuries
8. Acute Injuries
9. Muscle Injuries
10. Regional Injuries
11. Medical Conditions Presenting as Musculoskeletal Injuries
12. Head Injuries
13. Maxillo-facial injuries
14. Eye and Ear injuries
15. Lacerations
16. The Chartered Physiotherapist
17. Other Health Care Professionals

Introduction:

The trainee will be expected to be familiar with injury mechanisms and with principles of diagnosis, clinical assessment, investigation, treatment and rehabilitation of the common musculoskeletal injuries. It is essential that the trainee demonstrate proficiency at history taking and clinical assessment. With regard to **Unit 9 (Regional Injuries)**, two examples are provided at the end of the module section (Shoulder and Lower Leg) to guide the trainee.

That the trainee will know / understand;

- 1. Injury Definition and Classification:** the definition of an injury acute / overuse injury, direct / indirect trauma, gradation of soft tissue injury.
- 2. Damage and Repair:** inflammation, normal soft tissue healing, repair of bony injury.
- 3. Injury Prevention:** prehabilitation, effectiveness of warm-up / stretching, role of preseason evaluation, role of equipment design, role of protective equipment, role of conditioning and training programme design, role of training surface, role of rule changes in sport, role of correction of biomechanical abnormalities, role of coach and coach / medical team relationship.
- 4. Injury Rehabilitation:** the RICE regime, principles of injury healing and rehabilitation, practical guidelines regarding return to sport following injury, cross training principles.
- 5. History taking:** the importance of history taking in diagnosis and management, with emphasis on, mechanism of injury, injury severity assessment by history, goal setting and its effect on management.
- 6. Diagnostic Imaging:** usefulness of x-ray, diagnostic ultrasound, scintigraphy, CT scanning and MRI in diagnosis and management of bony and soft tissue injuries.
- 7. Acute Injuries:** definition of acute injury, direct and indirect mechanisms of acute injury, principles of fracture / dislocation classification and management.
- 8. Overuse Injuries:** definition of overuse injuries, principles of prevention, diagnosis and management.
- 9. Muscle Injuries:** principles of diagnosis and management of muscle tears' principles of diagnosis and management of intramuscular haematomas cramp.

**10. Regional Injuries:** clinical examination techniques for each body region, the diagnosis and management of the common acute and overuse injuries occurring in each body region.

**11. Medical Conditions** the non-musculoskeletal injuries that may present as musculoskeletal pain / dysfunction, including:

- peripheral vascular disease
- degenerative and inflammatory joint disease
- localised / systemic infection
- connective tissue disease
- neuropathy / entrapment neuropathy
- myopathy / myalgia / myositis /focal dystonia
- malignancy

**12. Head Injuries:** classification, clinical assessment and principles of management of head injuries, post concussion syndrome.

**13. Maxillo-facial Injuries:** assessment and first aid management of maxillo-facial (including nasal and dental) injuries, role of protective equipment (including mouth guards).

**14. Eye and Ear Injuries:** assessment and first aid management of eye and ear injuries.

**15. Wound Care Management:** principles of management of superficial and deep skin lacerations, including suture skills.

**16. The Chartered Physiotherapist:** the role of the physiotherapist in Sports and Exercise Medicine, the modalities used by the physiotherapist.

**17. Other health Care Professionals:** the roles for other disciplines in Sports and Exercise Medicine e.g. Podiatry / Osteopathy / Chiropractic / Massage etc.

3. Understanding of the changes which may be detectable with medical imaging and pathology testing in such conditions

### **Skills**

1. Ability to take a thorough history and suspect non-traumatic pathology from atypical and 'red flag' features
2. Ability to detect key signs on clinical examination to suspect non-traumatic pathology

3. Ability to utilise pathology and medical imaging services to confirm or exclude non-traumatic pathology

### **Experience**

1. Attend rheumatology, pathology and endocrine clinics
2. Attend lectures and seminars covering these conditions
3. Attend Orthopaedic and Fracture Clinics

### **3-B: Management of Soft Tissue and Sports Injuries**

#### **Knowledge**

##### *A. Injury Prevention*

1. Pre-participation screening (addressing risk factors, including biomechanical abnormalities)
2. Evidence regarding warm-up and stretching
3. Sports equipment, including protective equipment – health and safety pertinent to sport
4. Safe preseason training regimes
5. Targeted strength and conditioning programmes
  - sport-specific
  - individual-specific
6. Training surface and shoes
7. Rule changes in sport
8. Accurate diagnosis

##### *B. Acute Injury Management*

9. The principles of managing acute soft tissue injury – lacerations, sprains, strains, contusions, haematomas
10. The principles of managing acute bone and joint injuries – dislocations, fractures, avulsion injury, epiphyseal injuries
11. Understanding of the pathological process of soft tissue injury and the possible effects of common pharmacological treatments on this process
12. Accurate diagnosis

##### *C. Chronic/Overuse Injury management*

1. The principles of assessing, investigating and managing overuse injury.

##### *D. Principles of the conservative management of injury*

13. Principles of injury rehabilitation – ligament/tendon/muscle/bone/joint
14. Multidisciplinary approach to rehabilitation
15. Protected function and progressive functional approach to rehabilitation
16. Preservation of cardiovascular fitness and role of cross-training
17. Role of manual therapies in the management of soft tissue injuries
18. The use of taping, splints, braces, orthotics.
19. An understanding of the role of joint and soft tissue injections including their limitations and potential side effects.
20. To appreciate the importance and potential for injury prevention.

21. Psychological aspects of long term injury
22. The role of psychological strategies in the process of rehabilitation from long term injury

*E. Principles of the surgical management of musculoskeletal injury*

*F. Thorough understanding of the principles of tissue injury and repair*

### **Skills**

1. Management of acute injury to bone, joint and soft tissue.
2. The application of rehabilitation techniques.
3. Joint and soft tissue injection techniques.

### **Experience**

1. Regular attendance at sports medicine clinics.
2. 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.
3. Practical experience of the techniques utilised in acute and chronic injury management.



### **3-C: Musculoskeletal Radiology**

#### **Knowledge**

1. The role of imaging techniques in general terms and the way in which images are produced.
2. An understanding of the relative radiation risks applicable to different types of imaging.
3. 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.
4. 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.
5. The ability to construct a differential diagnosis based on history and clinical findings and the targeted use of imaging to reach a definitive diagnosis.
6. An understanding of the use of medical imaging for targeted treatment (e.g. guided injections) to complement history & examination.

#### **Skills**

1. 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)
2. An ability to interpret different modalities of medical imaging in a logical and structured manner, and in doing so identify significant pathology
3. Supervise injections utilising x-ray guidance.

#### **Experience**

1. Working within a multidisciplinary sports medicine clinic with access to all modern imaging modalities.
2. Regular discussion with musculoskeletal/sports radiology colleagues.
3. Regular attendance at x-ray meetings
4. Regular, supervised imaging-interpretation sessions in tutorials
5. Attending musculoskeletal ultrasound sessions including those in which injections are given.
6. Complete a course of musculoskeletal ultrasound (optional, see Module 8)

### **3-D: Gait and Biomechanical Assessment**

#### **Knowledge**

1. Functional anatomy of joints and musculo-tendinous units
2. Characteristics of bone, tendon, ligament, articular cartilage, muscle under stress and strain and potential for fatigue
3. Human movement analysis – basic kinematics and kinetics
4. Biomechanical analysis of sport-specific techniques
  - swimming
  - throwing
  - jumping
  - kicking
  - running
  - boxing
  - wrestling and martial arts
5. 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
6. Effects of faulty biomechanics, influence of posture
7. Methods and effects of changing biomechanics
8. Principles of body morphology
  - ectomorphs, endomorphs, mesomorphs
  - sport-specific, position-specific body composition
  - assessment of body composition
  - normal body composition

#### **Skills**

1. To perform biomechanical analysis:
  - standing
  - moving
  - sports specific

**Experience**

1. Gait analysis clinics/teams
2. Orthotic provision
3. Report of one case involving biomechanical assessment, video analysis and multidisciplinary management
4. Biomechanics experience with podiatrist / physiotherapy / biomechanist
5. Attend workshops on orthotic construction

## **MODULE 4: WORKING WITHIN THE TEAM ENVIRONMENT**

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### **4-A: Team Physician**

#### **Knowledge**

1. The role of the team physician
2. 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)
3. Health education and pre-season assessment
4. Acquisition of skills and physique
5. Protective equipment
6. Medical equipment, pharmacy supplies required for coverage of teams
7. Structuring training to prevent injury
8. Doping classes and methods/ permitted use of banned drugs/ doping control
9. Travel health issues, combating jet lag and immunisations
10. Athlete confidentiality and medico-legal aspects of team care
11. Disordered eating, female athlete triad
12. Child protection
13. Understand the composition and roles of the multidisciplinary team

#### **Skills**

1. Communication skills
  - Coaches / athletes / medical team / media
2. Ability to prepare a medical team for travel
3. Ability to monitor environment/ hygiene/ facilities
4. Ability to work both with individual athletes and a team
5. Ability to undertake pre-hospital care of an injured athlete
6. Show adequate record keeping

#### **Experience**

1. Supervised experience as physician in team sporting environment
2. Maintain a logbook of athletes and, teams and conditions seen
3. Experience of travelling with a variety of teams
4. Attend appropriate courses such as Advanced Life Support
5. Child protection course (desirable)

## **4-B: Event Physician**

### **Knowledge**

1. Legislative and medico-legal guidelines with regard to medical and crowd safety facilities at sporting venues
2. Guidelines for number and type of medical personnel required for sporting events with large participant numbers and/or large crowds
3. Relevant EU safety legislation governing the running of sporting events with large participation numbers and/or large crowds
4. Procedures for evacuation of injured athlete or member of the crowd from any given sporting event
5. Procedures for evaluating requirements in terms of pharmacy supplies, medical equipment, medical personnel, paramedical personnel and communication equipment at any given sporting event

### **Skills**

1. 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
2. Evaluate requirements in terms of pharmacy supplies, medical equipment, medical personnel, paramedical personnel and communication equipment at any given sporting event
3. Establish protocols for evacuation of injured athlete and/or member of crowd from sporting event

### **Experience**

1. Assist with provision of medical services at sporting events with large participation numbers and/or large crowd numbers
2. Attend courses and lectures regarding provision of medical services at such events
3. Obtain and read documents relating to relevant legislative and medico-legal requirements

## **4-C: Specific Sports**

### **Knowledge**

1. Familiarity with a wide variety of sports in terms of rules and regulations, physiological requirements and injury risk profiles
2. These sports to include
  - GAA – Football and hurling
  - Soccer
  - Rugby
  - 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

### **Skills**

1. Demonstrate a familiarity with the above sports with regards to rules and regulations, physiological requirements and injury risk profile
2. Provide medical treatment for athletes involved in these sports
3. Provide advice to team management regarding pre-participation screening, training programs, injury risk management and injury treatment, for any of these sports

### **Experience**

1. Spend time with teams involved in some of these sports / basic knowledge
2. Attend appropriate courses relating to the care of athletes involved in some of these sports

## **MODULE 5: MEDICAL EMERGENCIES**

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### **5-A: Head injury and Concussion**

#### **Knowledge**

1. Pathophysiology of concussion
2. Various definitions of concussion
3. Grading concussion severity – historical perspectives
4. Understanding of possible significant complications
5. Assessment of concussion
  - On field retrieval - principles of immediate management
  - 'Red flags' on history and examination
  - Neuropsychological testing techniques, including computer-based
6. Understanding of short and long-term sequelae of concussion
7. Rehabilitation of concussed athlete
8. Rationale for return to play
9. Sport-specific regulations
10. Maxillofacial and dental issues

#### **Skills**

1. Lead on field retrieval team and provide appropriate immediate management
2. Diagnose concussion on history, examination and neuropsychological testing
3. Clinically detect significant deterioration and provide appropriate management
4. Familiarity with neuropsychological testing techniques (including computer-based)
5. Provide safe and scientifically sound advice to athletes and team management regarding return to sport

#### **Experience**

1. Medical coverage of contact sports where concussion prevalence is significant
2. Tutorials, lectures updating evidence-based management of concussion
3. REMO course (desirable)

## **5-B: Sudden Death in Sport**

### **Knowledge**

1. Incidence and prevalence of sudden death in sport
2. Aetiology of sudden death in sport
  - Age-related factors
  - Sport-specific factors
3. Cardiological causes, including
  - HOCM
  - Coronary artery anomalies
  - Coronary artery disease
  - Conduction abnormalities
  - Structural derangements including valvular disease and Marfan's syndrome
4. Traumatic causes including
  - Head injury
  - Extracranial/maxillofacial pathology
  - Intracranial pathology, raised intracranial pressure
  - Diffuse and focal pathology
  - Abdominal injury
  - Chest injury
5. Environmental factors
6. Understanding of the role of pre-participation screening

### **Skills**

1. Implement strategies to reduce risk of sudden death in sport
2. Ability to identify at risk athletes through history, examination and appropriate investigation
3. Ability to manage athletes with known risk factors

### **Experience**

1. Provide coverage at contact sport events
2. Attend cardiological testing sessions
3. Read ECGs and identify relevant patterns of pathology
4. Observe echocardiograms
5. Successfully complete ALS, Pre-hospital Care Course, REMO or other approved course providing skills in resuscitation
6. Participate in pre-participation screening



## **5-C: Resuscitation Training**

### **Knowledge**

1. 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.
2. Basic pharmacology of drugs used in resuscitation
3. Thorough understanding of the principles of care for the unconscious patient
4. Basic knowledge of the principles of trauma care
5. Principles of the management of spinal injury, head injury, thermal injury, chest and abdominal injury eye trauma, dental trauma and genitourinary trauma.

### **Skills**

1. Ability to assess an accident scene
  - optimise safety at accident scene for the injured and the rescue team
2. Cardiopulmonary resuscitation: both expired air resuscitation and external cardiac compressions
3. Competency in defibrillation: manual and automated external defibrillators
4. Basic airway manoeuvres: jaw thrust, chin lift, head tilt
5. Airway adjuncts: nasopharyngeal airways and oropharyngeal airways including sizing and indications for use
6. Advanced airway techniques: laryngeal mask airways, combitubes, endotracheal intubation
7. Needle thoracotomy
8. Needle cricothyroidotomy
9. Safe transfer onto spinal board
10. Log roll
11. Splinting of pelvic and lower limb fractures
12. Treatment of major open fractures

### **Experience**

1. Ambulance observer sessions
2. Theatre sessions for airway management
3. Emergency Medicine sessions (6 months)
4. Advanced life support status
5. Successfully complete ALS, Pre-hospital Care Course, REMO or other approved course providing skills in resuscitation

## **5-D: Emergency Medicine**

### **Knowledge**

1. Basic triage of injuries
2. Acute assessment and treatment of soft tissue injuries
3. Principles of basic fracture management
4. Knowledge of common fractures and dislocations in upper and lower limbs
5. Assessment and treatment of minor and major head injuries
6. Differential diagnoses in acute eye trauma
7. Differential diagnoses in acute ear, nose and throat trauma
8. Understanding of the principles and practice of local anaesthetic use including field and regional anaesthesia

### **Skills**

1. Common fracture manipulations: fingers and ankles
2. Reduction of common dislocations: shoulder, elbow, fingers, patella, ankle and toes
3. Skin and subcutaneous suturing
4. Examination of head and central nervous system to detect skull/ basal skull fractures and major intracranial pathology
5. Examination of external eye and retina
6. Examination of nose: recognition of septal pathology
7. Competency in use of sedation with thorough awareness of indications and contraindications
8. Familiarity of use of different local anaesthetics
9. Regional anaesthetic techniques: eye, axillary block, shoulder infiltration, femoral blocks, ankle blocks and ring blocks

### **Experience**

1. Minimum of 6 months of emergency medicine training in an approved centre

## **5-E: Medical Emergencies**

1. Epileptic fit
2. Acute asthmatic attack
3. Acute allergic reactions (bee sting)
4. Acute diabetic event

## **MODULE 6: DRUGS IN SPORT**

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### **Knowledge**

1. Understanding of effects of various pharmaceutical agents on exercise performance
2. History of Drugs in Sport
3. 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
4. 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
5. Education of athletes and administrators – the doctor's roles & responsibilities
6. Regulatory authorities including government, IOC, WADA and individual sporting organisations

### **Skills**

1. Educate players and management regarding Drugs in Sport
2. Access current information regarding Drugs in Sport
3. Advise athletes regarding appropriate pharmacological treatment of medical conditions
4. Clinically suspect use of banned substances/methods
5. Adhere strictly to relevant government legislation and sporting regulations
6. Provide appropriate support to the athlete during testing procedures

### **Experience**

1. Constantly review the latest information regarding Drugs in Sport
2. Attend lectures, seminars provided by testing authorities
3. Provide educational lectures to players and team management
4. Attend and observe drug testing procedures

## **MODULE 7: PSYCHOSOCIAL ASPECTS OF SPORTS AND EXERCISE MEDICINE**

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### **Knowledge**

1. Awareness of motor learning, selective attention and information processing theories and models
2. Psychology of behavioural change – sedentary to active living
3. Psychological aspects of stress, trauma, disability, rehabilitation, and failure in sport
4. Psychological aspects of motivation, arousal and performance
5. Group psychology: of team, coach, medical team, group dynamics, behaviour remodelling
6. Psychological/ mood effects of physical activity
7. 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.
8. Psychosocial effects of retirement from sport
9. Psychological aspects of long term injury
10. The role of psychological strategies in the process of rehabilitation from long term injury
11. Goal setting, concentration, mental rehearsal
12. Psychological models of overtraining

### **Skills**

1. Interpretation of the results of psychological, psychometric, social and vocational assessments
2. Counselling skills, including understanding of its benefits and limitations
3. Recognition of psychosocial influences on performance
4. Management of psychological effects of failure
5. Management of multi-professional team including appreciation of the role of sports psychologist in group and individual performance
6. Recognition, assessment and counselling of athletes with suspected eating disorders

### **Experience**

1. Working with a sports psychologist on an individual and group basis, in training, pre-competition and competition environment
2. Management of athletes with psychological problems due to failure and social problems
3. Experience with psychologist working in community exercise programmes
4. Attendance of appropriate courses and meeting e.g. counselling course

## **MODULE 8: INVESTIGATIONS AND PROCEDURES**

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### **Knowledge**

1. Knowledge of muscle and nerve physiology – the motor unit
2. Understanding of the methodology behind electrophysiological testing (NCS and EMG)
3. An understanding of the indications for electrophysiological studies and their strengths and weaknesses.
4. Be able to describe the components of the normal EMG and NCS
5. Understanding of the EMG findings in denervated muscle, myopathy and inflammatory myositis
6. Be able to describe the three main types of nerve injury (neuropraxia, axonotmesis, and neurotmesis).
7. Thorough knowledge of muscle compartment anatomy, specifically related to possible complications of muscle compartment pressure testing
8. Joint anatomy, specifically related to possible complications of aspiration/injection of joints
9. Principles of lower limb biomechanics and the use of orthotics
10. Principles and techniques of musculoskeletal ultrasonography

### **Skills (mandatory)**

1. Safely inject major joints including shoulder, elbow, knee and ankle
2. Knowledge of safely performing compartment pressure tests for the four major compartments of the lower leg

### **Skills (optional)**

1. Perform EMG and nerve conduction studies
2. Perform cardiological stress testing
3. Perform injections with and without x-ray guidance of other joints including zygo-apophyseal, hip, sacroiliac, wrist etc
4. Perform ultrasound examination for common musculoskeletal conditions

### **Experience**

1. Attend clinics where EMG and NCS testing is performed
2. Attend clinics where muscle compartment pressure testing is performed
3. Attend joint injection workshops
4. Attend cardiology clinics where exercise stress testing is performed
5. Complete formal course of instruction in musculoskeletal ultrasonography where appropriate qualification is gained (desirable)

## **MODULE 9: SPINAL INJURIES, AMPUTEE REHABILITATION & DISABILITY IN SPORT**

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### **Knowledge**

1. Awareness of the special needs of disabled athletes and exercisers e.g. cerebral palsy, amputees, visually and hearing impaired, learning difficulties etc
2. Awareness of the special medical needs of disabled athletes and exercisers e.g. knowledge of catheters, pressure sores, stump care etc
3. Have an understanding of the physical problems experienced by amputees and wheelchair users with everyday living and with respect to sport
4. Have knowledge of the types of prosthesis available, particularly those used for sport
5. Have knowledge of the types of wheelchair available and adaptations required for different sports
6. Awareness of support groups and sports organisations for disabled people
7. Knowledge of the effects of spinal injury at different vertebral levels
8. Awareness of disability classification and relevant competition rules and regulations – Special Olympics, Paralympics Associations

### **Skills**

1. Assessment of injuries in disabled athletes
2. Recognition and treatment of autonomic dys-reflexia

### **Experience**

1. Work with members of the multi-professional team, including physiotherapists, engineering and technical staff in assessment of disabled patients for equipment and exercise needs
2. Work with disabled sports teams and Paralympic Ireland
3. 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**

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### **Knowledge**

#### *Women*

1. Understanding on the effect of hormone cycles on performance
2. Understanding the effects of exercise on the menstrual cycle
3. Principles of manipulation of menstrual cycle
4. Contraception options for athletes and the relevant merits & disadvantages in relation to performance
5. Understanding of the relationship between hormones, weight, osteoporosis and stress fractures in female athletes
6. Relationship between pregnancy and exercise, in terms of both safety and performance
7. Principles of return to exercise postpartum
8. Understanding of gender differences in exercise

#### *Older athletes*

1. Understanding of the effect of ageing on muscle bulk, cardiovascular fitness, endurance etc
2. Knowledge of considerations when exercising with chronic diseases, and the effect of chronic diseases on performance
3. Understanding of the risks and benefits of exercise in older people
4. Knowledge of the effect of medications e.g. beta-blockers on exercise capacity
5. Knowledge of exercise prescription
6. The role of physical activity in functional independence in old age

#### *Children*

1. Anatomical and physiological differences of the child and adolescent, in relation to the management of injury and illness
2. Paediatric musculoskeletal injuries: epiphyseal plate injuries, traction apophysitis, common fractures and specific soft tissue injuries
3. An understanding of non-accidental injury in all its forms, to include an appreciation of child protection issues and the relevant laws.
4. Understanding of Gillick competency and the legality of treating minors.
5. Basic knowledge of metabolic diseases encountered in children
6. Understanding and knowledge of the principles of pre participation screening in children, with particular emphasis on cardiology screens for HOCM
7. Diagnosis and treatment of exercise induced asthma in childhood.
8. Application of appropriate training workloads to the developing skeleton and metabolism
9. 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

## **Skills**

### *Women*

1. Ability to advise re:
  - training through pregnancy
  - return to sport after pregnancy
2. Appropriately investigate athletes with menstrual problems and treat accordingly

### *Older people*

1. Medically assess older people wanting to participate in sport: elite athletes, recreational exercisers and new exercisers for potential risk factors
2. Provide appropriate exercise prescription for the elderly athlete
3. Prescribe appropriate levels of activity in older people with chronic diseases

### *Children*

1. Identification and assessment of the sick child
2. Interpretation of paediatric X-rays and scans
3. Competency in examination of the paediatric skeleton

## **Experience (desirable)**

### *Women*

Work with female athletes and teams

### *Older athletes*

1. General training in adult medical specialities e.g. respiratory medicine, cardiology
2. Experience in basic ECG reading and exercise testing (see cardiology section)

### *Children*

1. Attachment to adolescent squad in a designated sport (gymnastics, swimming, diving, trampolining) - desirable
2. Child protection course
3. Emergency Medicine



## **MODULE 11: RESEARCH, STATISTICS AND AUDIT**

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### **Knowledge**

1. Ethics of clinical research
2. Types of study design – experiments, observational, controlled, single case.
3. Principles of statistics, trial design, randomisation and techniques of data analysis
4. Epidemiology of sports injuries and health problems associated with exercise
5. Principles of conducting an audit
  - Objectives
  - Design
  - Implementation
  - Reporting of results
  - Interventions

### **Skills**

1. To be able to read scientific and clinical and other relevant papers and reports critically
2. To be able to evaluate the evidence presented in papers, literature reviews and meta-analysis
3. To report research findings in written papers and at meetings
4. To design and implement a clinical audit
5. To incorporate research findings into clinical practice
6. To take the appropriate action arising from the clinical audit
7. To supervise a research a project
8. To demonstrate an ability to design research

### **Experience**

1. Participating in training in research methods and statistics
2. Undertake regular 6 monthly clinical audit projects
3. Laboratory techniques relevant in Sports and Exercise Medicine
4. Analysing data by appropriate means
5. Presenting the results in a paper and at meetings, so that the research is subjected to peer review

## **MODULE 12: TEACHING AND PRESENTATION SKILLS**

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### **Knowledge**

1. Principles of presentation construct
2. Principles of customising information presentation to groups of varying levels of medical understanding (athletes, trainers, allied health professionals, other Sports and Exercise Medicine specialists etc)
3. Familiarity with commonly used software packages for presenting information

### **Skills**

1. To be able to present educational information to audiences in a confident and competent manner
2. To be able to effectively tailor a presentation to the level of medical understanding of a specific audience
3. To be competent with using industry standard presentation software packages

### **Experience**

1. Regular presentation of Sports and Exercise Medicine knowledge to community groups, athletes and other medical professionals
2. Presentation (case history, literature review, research update) at Sports and Exercise Medicine conference on an annual basis: regional, national and international (preferred)
3. Attendance at formal teaching courses and workshops

## **MODULE 13: SPORTS MEDICINE MANAGEMENT**

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### **Knowledge**

1. Principles of personal effectiveness/ time management
2. Principles of business planning and marketing strategy
3. Understanding of IT in medical practice and potential for enhancing practice efficiency
4. Human Resources Issues
  - Staff recruitment - person specification, job description, interview technique, equal opportunities
  - Staff contracts
  - Staff development, appraisal
  - Disciplinary procedures, complaints procedures
5. Principles of good communication, counselling
6. Principles of good teamwork - group dynamics, leadership techniques, conflict resolution, motivation, promotion of team identity
7. Ability to work effectively within multidisciplinary teams around athletes and exercisers - physiotherapists, sports scientists, osteopaths, chiropractors, coaches and others.
8. Principles of effective financial accounting, planning, policy development and budgeting
  - Organisation of the HSE
  - Funding health care for sport and individual exercisers
  - Possibilities and limitations of care from the HSE
  - Private sports medicine services
  - Possibilities and limitations of care from the Private Sector and Voluntary Sector
9. Organisations within the medical profession:
  - IMC, Royal Colleges, (JCHMT and SAC), FSEM
  - Specialist societies
  - Professions allied or groups supplementary to medicine - physiotherapy, nursing, orthotists, biomechanists, sports scientists, psychologist, nutritionists
10. Clinical Governance
11. Appraisal
12. Principles of planning and running a formal meeting with emphasis on formal structure of the meeting

### **Skills**

1. To communicate effectively – verbal, written
2. To write good medical records and reports
3. To promote activity in the general population
4. To employ and encourage methods to prevent injury in athletes
5. To contribute to professional education for:
  - medical undergraduates and postgraduates
  - other health care personnel
  - others working in sports - athletes, coaches, sports scientists
6. To plan and manage own continuing professional development
7. To participate effectively in committees
8. Ability to plan and implement a formal meeting, adhering to formal requirements of accountability

### **Experience**

1. Preparing business plans and proposals
2. Staff recruitment process
3. Staff appraisal
4. Study annual accounts and budget
5. Fund raising
6. Health care systems for sports or individual exercisers – HSE and private
7. Various multidisciplinary teams in which Sports Physicians are involved
8. Development of services for injured and unwell athletes
9. Contribution to public health policy development aimed at increasing participation in sport and physical activity.
10. Participation in committees with experience of chairing and secretarial roles

## **MODULE 14: ETHICAL AND MEDICO-LEGAL ASPECTS**

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### **Knowledge**

1. Relevant EU legislation and medico-legal guidelines
2. Legislation regarding patient confidentiality
3. Legislation regarding keeping of medical records
4. Requirements for patient consent
5. Guidelines for dealing with minors and other potentially vulnerable individuals
6. Strategies utilised by media and other interested parties to gain information in breach of patient confidentiality
7. Privacy legislation
8. GDPR

### **Skills**

1. Abide by legislative and medico-legal guidelines
2. Deal appropriately with minors and other potentially vulnerable individuals
3. Know when it is appropriate to have a chaperone present
4. Maintain legible and accurate medical records at all times
5. Obtain patient consent where appropriate
6. Respect patient confidentiality and resist coercion by media and other interested parties
7. Abide by privacy legislation with regard to all individuals and parties

### **Experience**

1. Attend educational seminars relating to ethics and medico-legal obligations
2. Deal with minors and other potentially vulnerable individuals under supervised conditions
3. Observe others obtaining patient consent
4. Act as chaperone for others
5. Read information available and attend workshops on privacy legislation

## **MODULE 15: SELF-DIRECTED LEARNING**

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### **Knowledge**

1. Objective understanding of own strengths and weaknesses in relation to Sports and Exercise Medicine training
2. Potential resources for gaining further training in area of weakness or in area of special interest
3. Procedures for obtaining prospective approval of elective activities

### **Skills**

1. Ability to identify and use appropriate resources (e.g. mentors) for objective feedback on strengths and weaknesses
2. Ability to use information technology and medical networks to gain more information about potential elective activities
3. Ability to design and implement elective activities while complying with procedures for Sports and Exercise Medicine training

### **Experience**

Any activity which is considered beneficial for the trainees Sports and Exercise Medicine training, while complying with training procedures

## **Appendix - Suggested Reading List**

## Journals

1. British Journal of Sports Medicine (BJSM)
2. American Journal of Sports Medicine
3. Clinical Journal of Sport Medicine
4. Clinics in Sports Medicine
5. Medicine and Science in Sport and Exercise
6. Physician and Sportsmedicine Online
7. Sports Medicine
8. Sports Medicine and Arthroscopy Review
9. Current Sports Medicine Reports
10. Emergency Medicine Journal and /- or some of the Orthopaedic Journals

## Books

1. Primary Care Sports Medicine, by McKeag and Hough, Brown & Benchmark, ISBN 0-697-14841-6
2. Clinical Sports Nutrition, by Burke and Deakin, McGraw-Hill, ISBN 0-074-70828-7
3. Functional Rehabilitation of Sports and Musculoskeletal Injuries, from the Rehabilitation Institute of Chicago and Aspen Publication, ISBN 0-8342-0612-9. (2 copies; one on short-loan and one on regular loan).
4. Orthopaedic Sports Medicine, Volumes 1-3, by DeLee and Drez, Saunders Publication, ISBN 0-7216-5602-1.
5. Last's Anatomy: Regional and Applied, 10<sup>th</sup> Edition, edited by Sinnatamby, Saunders, ISBN 0-443-05611-0
6. Human Tendons, by Józsa and Kannus, Human Kinetics, ISBN 0-87322-484-1.
7. Sports Physiotherapy: Applied Science and Practice, edited by Zuluaga et al, Churchill Livingstone, ISBN 0-443-04804-5
8. The Spine in Sports, by Watkins, Mosby Publication, ISBN 0-8016-7502-2.
9. ACSM's Essentials of Sports Medicine, by Sallis and Massimino, Mosby Publication, ISBN 0-8151-0157-0.
10. Controversies in Orthopaedic Sports Medicine, edited by Chan et al, Williams and Wilkins, ISBN 962-356-025-7
11. Sports Injury Assessment and Rehabilitation, by Reid, Churchill Livingstone, ISBN 0-443-08662-1
12. Medical Problems in Athletes, by Fields and Fricker, Blackwell Science, ISBN 0-86542-480-2.
13. Isokinetics, by Dvir, Churchill Livingstone, ISBN 0-443-04794-4.
14. Clinical Sports Medicine, Revised 2<sup>nd</sup> Edition, by Brukner and Khan, McGraw Hill, ISBN 0-074-71108-3.
15. Science and Medicine in Sport, 2<sup>nd</sup> edition, edited by Bloomfield, Fricker and Fitch, Blackwell Science, ISBN 0-86793-321-6.
16. Exercise for Prevention and Treatment of Illness, by Goldberg and Elliot, F A Davis Publication, ISBN 0-8036-4163-X.



17. Sports Injuries, Examination, Imaging and Management, by Eustace, Johnston, O'Neill, O'Byrne, Churchill Livingstone Elsevier, ISBN -13 978-0-443-10203-5.
18. Medical and Orthopaedic Issues of Active and Athletic Women, by Agostini, Hanley and Belfus/Mosby, ISBN 1-56053-019-7.
19. Essentials of immediate medical care, by J. Eaton, 2<sup>nd</sup> edition, Churchill Livingstone. ISBN 0-443-05345-6.
20. Ethics, Injuries and the Law in Sports Medicine, by E. Grayson, 1999. Butterworth & Heinemann (editors). ISBN 0-7506-1576-1.
21. Antioxidants and exercise, by Jan Karlsson. 1996. Human Kinetics. ISBN 0-87322-896-0.
22. Physiology of sport and exercise, by J. H. Wilmore and D. L. Costill, 2<sup>nd</sup> edition, 1999. Human kinetics. ISBN 0-73600-084-4.
23. Exercise metabolism, edited by M. Hargreaves (1995). Human kinetics. ISBN 0-87322-453-1
24. Biochemistry of exercise and training, by Maughan, Gleeson and Greenhaff (1997). Oxford University Press. ISBN 0-19-262741-4.
25. Myofascial Pain and Dysfunction: The Trigger Point Manual Volume 1 - The Upper Extremities, Travell, J.G. & Simons, D.G. Williams & Wilkins 1983 ISBN 0-683-08366-X
26. Myofascial Pain and Dysfunction: The Trigger Point Manual Volume 2 - The Lower Extremities, Travell, J.G. & Simons, D.G. Williams & Wilkins, 1992 ISBN 0-683-08367-8
27. Rheumatology Klippel, J.H. & Dieppe, P.A., Mosby Year Book, 1994 ISBN 0-397-44731-0
28. Musculoskeletal and Sports Injuries, Corrigan, B. & Maitland, G., 1994 Butterworth-Heinemann ISBN 0-7506-1485-4
29. The Athletes Shoulder, Andrews, J.R. Churchill Livingstone 1994, ISBN 0-443-08847-0
30. The Upper Extremities in Sports Medicine, Nicholas, J.A. & Hershman, E.B., Mosby, 1990 ISBN 0-8016-3943-3
31. The Lower Extremity & Spine in Sports Medicine Volume 2 & 3, Nicholas, J.A. & Hershman, E.B., Mosby 1995, ISBN 0-8151-6391-6
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