Scientific Contents of Masters of Science in Sports Medicine Bylaws 2018

Program structure and contents

a) Program duration:

- **1st part: -** One Semester (6 months).
- **2nd part: -** 3 Semester (1.5 year)
- **Thesis**

b) Program structure:

- **Total hours of program:** 46 credit hours
- **1st part:** 10 credit hours
- **2nd part :** 30 credit hour
- **Thesis:** 6 credit hours

The First Part
Compulsory Courses
Applied Anatomy
Applied Physiology
Pharmacology
Performance Enhancing Drugs
Biochemistry in Relation to Sports Medicine
Methods of research and statistics
Nutrition in Relation to Sports Medicine
Elective Courses (Choose one Course)
Behavioral sciences and their relationship to sports medicine
United Olympic Athlete
International Laws Regulating Sports
Introduction to motion mechanics
The Second Part
Sports injuries
Internal Medicine in Relation to Sports Medicine
Emergency Medicine
Dermatology in relation to sports medicine
Psychiatry in relation to sports medicine

c- Teaching plan

First part (one semester)

a- Compulsory courses:

Course Title	Course Code	Credit hours	No. of teaching hours/week	Total teaching hours (one semester)
			Lectures	
Applied Anatomy	SM 601	2	2	30
Applied Physiology	SM 602	2	2	30
Pharmacology	SM 603	1	1	15
Performance Enhancing Drugs	SM 604	1	1	15
Biochemistry in Relation to Sports Medicine	SM 605	1	1	15
Methods of research and statistics	SM 606	1	1	15
Nutrition in Relation to Sports Medicine	SM 607	1	1	15

Elective Courses (Choose one Course):

Course Title	Course Code	Credit hours	No. of teaching hours/week	Total teaching hours (one semester)
			Lectures	
Behavioral sciences and their relationship to sports medicine	SM 608	1	1	15
United Olympic Athlete	SM 609	1	1	15
International Laws Regulating Sports	SM 610	1	1	15
Introduction to motion mechanics	SM 611	1	1	15

The Second part (three semesters)

Course Title	Course Code	No. of teaching hours/week			Total teaching hours (3 semesters)
		Theoretical	Clinical/ Practical	Total	
Sports injuries	SM 612	8.5	3	11.5	517.5
Internal Medicine in Relation to Sports Medicine	SM 613	8.5	3	11.5	517.5
Emergency Medicine	SM 614	5	2	7	315
Dermatology in relation to sports medicine	SM 615	1.5	1	2.5	112.5
Psychiatry in relation to sports medicine	SM 616	1.5	1	2.5	112.5
Total	-	25	10	35	1575

Final exam:

The First Part

	Written	Oral	Practical	Clinical	Total Marks
Applied Anatomy	**60**	**15**	**25**		**100**
Applied Physiology	60	**15**	**25**		**100**
Pharmacology	30	**20**			**50**
Performance Enhancing Drugs	30	**20**			**50**
Biochemistry in Relation to Sports Medicine	30	**20**			**50**
Methods of research and statistics	30	**20**			**50**
Nutrition in Relation to Sports Medicine	30	**20**			**50**

Elective Courses (Choose one)

Course Title	Written	Oral	Practical	Clinical	Total Marks
Behavioral sciences and their relationship to sports medicine	30	**20**			**50**
United Olympic Athlete	30	**20**			**50**
International Laws Regulating Sports	30	**20**			**50**
Introduction to motion mechanics	30	**20**			**50**

The Second Part

Course Title	Written	Oral	Practical	Clinical	Total Marks
Sports injuries	**350**	**75**		**75**	**500**
Internal Medicine in Relation to Sports Medicine	**350**	**75**		**75**	**500**
Emergency Medicine	**200**	**50**		**50**	**300**
Dermatology in relation to sports medicine	**50**	**25**		**25**	**100**
Psychiatry in relation to sports medicine	**50**	**25**		**25**	**100**

Applied Anatomy

1) GENERAL ANATOMY

Bones :- Functions , classifications , structure of living bone , general features , growth and blood supply
-Cartilages : general features , types
-Joints :classifications (fibrous , cartilaginous , synovial) , types of synovial joints , structure of synovial joints , movements
-Skeletal muscles : characters , functions
-Fascia : types , characters , derivatives
-Spinal nerves : classification , origin ,course and structure

2) NECK AND TRUNK

-Muscles of facial expression , muscles of mastication and tempromandibular joint (T.M.J.)
-Muscles of neck :suprahyiod& Infrahyoid muscles , scalene muscles, prevertebral muscles , muscles of back of neck
-Joints , ligaments and movements of vertebral column
-Nerves of head and neck :-Cranial nerves ,cervical plexus

3) UPPER, LOWER LIMBS AND THORAX

Upper limb :--Muscles of: pectoral region , shoulder ,back of trunk ,arm ,forearm and hand
-Joints ,ligaments and movements of upper limb
-Nerves : brachial plexus ,nerves of upper limb
*Lower limb :-Muscles of : front ,medial and back of the thigh ,gluteal region , popliteal fossa , front and back of leg ,dorsum and sole of foot
-Joints and ligaments ,movements of lower limb
-Nerves :Sacral plexus , sciatic ,tibial ,common peroneal , femoral obturator , deep peroneal , superficial peroneal nerves
*Segmental innervations (dermatomes)of the head ,neck ,trunk and limbs
*Mechanism of walking ,transmission of body weight ,hand grip

Thorax :--Thoracic wall : intercostal muscles and intercostal nerves -Diaphragm, mechanism of respiration
-Heart ,Pericardium
-Mediastinum : divisions and contents

-Nerves :phrenic nerves , vagi ,recurrent laryngeal nerves ,thoracic part of sympathetic chain

4) NEUROANATOMY

Cerebral hemisphere :Cerebral cortex , basal ganglia , diencephalon , internal capsule
-Brain stem : midbrain , pons , medulla oblongata
-Cerebellum , Spinal cord
-Blood supply : cerebral arteries ,vertebral artery and basilar artery , internal cerebral veins ,basal vein & great cerebral vein
-Meninges , C.S.F. (sources and circulation)
-Vertebral canal , intervertebral foramina , Sacral canal & cauda equina

Applied Physiology

Contents

Practical

1-Muscle functioning testing (including isometric , isokinetic and isotonic muscle function tests)

2- Electromyographic (EMG) analysis of muscle function

3- Muscle biopsy techniques and interpretation of results

4- Lung function testing at rest and during exercise

5- Exercise testing to assess the cardiovascular response to exercise and analysis of oxygen consumption

Lectures

Structural properties of the muscle
Physiology of muscle contraction
muscle metabolism
skeletal muscle blood flow and muscle fatigue
metabolic adaptation to training
EMG activity and muscle function
Neurophysiology of movement
Gas exchange
Oxygen transport by blood
Carbon dioxide transport in the blood
Pulmonary function testing
Ventilatory response during exercise
Control of breathing
Cardiac output
Arterial blood pressure
cardiovascular response to exercise
Cardiac reserve and cardiac work
Control of heart function at rest and during exercise
Myocardial adaptation to exercise training

Pharmacology

Course contents

1) General Pharmacology	• Drug forms& rout of drug administration • Basic principles of pharmacokinetics • Basic principles of pharmacodynamics • Adverse effects of drugs • Drug interactions
2) Pharmacotherapy pain & analgesic	• Antipyretic & anti inflammatory drugs • Central analgesics – opioids
3) Pharmacotherapy gout	• Hypo uricemic & anti gout drugs
4) Pharmacology ofautonomic nervous system	• Cholinergic & a transmission

5) Pharmacology of skeletalmuscle	• **Muscle relaxants**
6) Local & general anesthetic drugs	
7) Pharmacotherapy of epilepsy	**Anti epileptic & anti convulsivedrugs**
8) Cardiac pharmacology	**Positive inotropic drugs ,**
9) Pharmacotherapy of hypertension	**Anti hypertensive drugs**
10) Pharmacotherapy of dyslipidemias	**Lipid lowering drugs (** hyperlipidemic **)**
11) Pharmacology of hemostasis & coagulation	
12) Pharmacotherapy of anaemia	

13) Pharmacotherapy ofdiabetes	• **Insulin & non insulin anti diabetics**
14) Doping controlbanned substances	• **Anabolic androgenic steroids , peptide hormones , growth factors &mimetics ,beta-2 agonists .**
15) Sport supplementation	
16) Chemotherapeutic	• **Antibiotics**

drugs	
17) Antifungal agents	
18) Antiviral agents	
19) Pharmacotherapy of gastrointestinal diseases	• **Peptic ulcer, spasmolytic, antidiarrheal drugs & antiemetic drugs.**

Performance-Enhancing Drugs

Course contents **:**

1- Introduction, history & categories of drug Doping(pharmacology of Performance-Enhancing Drugs)
2- Anabolic androgenic steroids
3- Hormones and related substances
4- B2-Agonists & Agents with anti-estrogenic activity
5-Diuretics and other masking agents
6- Prohibited methods
7- Stimulants
8-Prohibited substances in particular sports
9- Dietary supplements
10- Doping control procedures
11- Exercise Addiction: The Dark Side of Sports andExercise
12- Addiction in Retired Athletes
13- Sudden death in athletes
14-Concussion in Sports & Posttraumatic Stress inAthletes
15- Ethical issues and doping control

Biochemistry in Relation to Sports Medicine

Course contents:
Subject
Blood pH regulation, acidosis and alkalosis
Glucoseaminoglycans (GAGs), collagen , clinical correlation
Blood glucose regulation, Glucose tolerance test, hyper- and hypoglycemia
Diabetes Mellitus. Plasma lipoproteins, hyperlipidemia
Cholesterol metabolism, hypercholesterolemia and Atherosclerosis
Lipotropic factors, fatty liver
FA oxidation, ketosis
Urea cycle, NPN compounds
Heme metabolism and hemoglobinopathies
Porphyria and Jaundice
Insulin, steroid, thyroid and parathyroid hormones
Plasma enzymes & their diagnostic values
Vitamins & their deficiency manifestation
Calcium & phosphate homeostasis, sodium, potassium, iron, zink and their deficiency manifestation.
Hyperuricemia & gout
DNA structure, replication, transcription & Regulation of gene expression
RNA structure, transcription and posttranscriptional modification
Cell cycle & apoptosis, DNA damage, mutation and repair
Protein synthesis: translation and posttranslational modifications
Recombinant DNA technology, blotting techniques and gene therapy.
Liver & kidney function tests, Urine, blood, and sweat: normal and abnormal constituents& their clinical relevance.
Total

Methods of research and statistics

Course Contents

Topics
Types of data
Distribution of data
Sources of data
Collection of data: • Sampling • Screening • Survey • Epidemiological studies
Summarization of data: • Measures of central tendency • Measures of scatter
Presentation of data: • Tabular presentation • Graphic presentation • Mathematical presentation
Hypothesis testing steps
Tests of significance: • Parametric tests • Non parametric tests
Total

Nutrition in Relation to Sports Medicine

Course Contents

Topics
Basic nutrients: Carbohydrates, Fats, Proteins, Vitamins & minerals
Dietary fibers
Trace elements
Feeding of vulnerable group Females in childbearing period School children Youth Athletes Geriatric
Antioxidants
Food additives
Nutritional assessment Food balance sheet
Therapeutic nutrition Diabetic patient Hypertensive patient Renal patient Hepatic patient
Nutritional health problems:- Protein energy malnutrition: Marasmus Kwashiorkor
Vitamin deficiency:
Anaemias: Iron deficiency anaemia Megaloblasticanaemia
Dental caries Osteoporosis &osteomalachia
Obesity

Behavioral sciences and their relationship to sports medicine

1- Introduction &historical background

2-Psychology in relation to sports

3-Self-esteem and confidence

4-Basic brain structures and behavior. Developmental psychology

5-Personality

6- Stress

7- Emotions

8 – Motivation

9- Perception, Attention, Sensory deprivation

10- Social psychology

11- Psychology of aggression

12-Intelligence, Imagination and learning

13- Memory and thinking

14-Frustration and defensive mechanisms, sleep

United Olympic Athlete

Course content:

• International Governance of Individual Sports
1. Olympic Games
2. Olympic Charter
3. International Olympic Committee (IOC)
4. International Sports Federations (IFs)
5. National Olympic Committees (NOCs)
6. Organising Committees of the Olympic Games (OCOGs)

International laws regulating sports

1- Course content:	• 1. Introduction 1.1. Scope of Guide 1.2. List of Key Abbreviations 2. Court of Arbitration for Sport 2.1. Overview 2.2. Arbitral Awards • 3. Anti-Doping 3.1.World Anti-Doping Agency (WADA) 3.2. National Anti-Doping Agencies 3.3. Anti-Doping Treaties and Declarations

Introduction to motion mechanics

Course content:	1- Biomechanics in the sports field. 2- Terminology used in the study of movement. 3- Basic concepts and principles in mechanics 4- Strength: to maintain equilibrium or to change motion. 5- Kinematics of movement in a straight line.

Sports injuries

Introduction: 1. Epidemiology 2. General clinical approach 3. general principles of prevention of sports injuries 4. Muscle and soft tissue injuries: 5. Acute soft tissue injuries 6. Prevention of acute muscle injuries in sport **Knee injuries:** .1 Clinical assessment of the acutely injured knee in the athlete .2 Acute injuries of the knee .3 Functional anatomy of the knee joint .4 Acute injuries to the anterior cruciate ligament .5 Acute injuries to the posterior cruciate ligament .6 Acute injuries of the collateral ligaments of the knee .7 Acute meniscal injuries of the knee .8 Acute fractures of the knee .9 Clinical assessment of the athlete with chronic knee pain .10 Clinical biomechanics of overuse injuries of the athlete .11 surgical management of Chronic anterior knee pain in the athlete .12 surgical management of Chronic medial knee pain in the athlete 13. Surgical treatment of chronic knee pain in the athlete	1 محتوى المقرر:

Leg injuries: 1. Clinical assessment of the acutely injured leg in the athlete 2. Acute injuries of the leg in athletes 3. Functional anatomy of the leg 4. Clinical assessment of the athlete with chronic pain in leg 5. Clinical biomechanics of overuse injuries of the leg in the athlete 6. Overuse injuries of the leg 7. Surgical treatments of chronic leg pain in athletes **Ankle and foot injuries:** 1. Functional anatomy of the ankle joint 2. Clinical assessment of the acutely injured ankle and foot 3. Acute fractures to the ankle and foot in athletes 4. acute ligamentous injuries of the ankle and foot of athlete 5. Prevention of acute ligamentous injuries of the ankle 6. Clinical assessment of the athlete with chronic pain in the ankle and foot 7. Sports injury 8. Clinical biomechanics of overuse injuries of the ankle and foot 9. Surgical management of Chronic heel pain in the athlete 10. Surgical management of Chronic midfoot pain in the athlete 11. surgical management of Chronic forefoot pain in the athlete 12. Surgical treatment of chronic ankle and foot pain in athlete **Wrist and Hand injuries in the athlete:** 1. Functional anatomy of the hand and wrist 2. Clinical biomechanics 3. Clinical assessment of acute hand and wrist injuries 4. Acute fractures of the hand and wrist 5. Acute soft tissue injuries 6. Clinical assessment of the athlete with chronic hand and wrist pain 7. Surgical treatment of chronic wrist and hand pain 8. Splinting the hand and wrist in athletes	2

Injuries to lumbar spine in athletes: 1. Functional anatomy of the lumbar spine 2. Clinical biomechanics 3. Clinical assessment of acute lower back injury 4. Acute fractures of the lumbar spine 5. Acute soft tissue injuries 6. Clinical assessment of chronic lower back pain 7. Overuse injuries of the lower back 8. Surgical treatment of chronic lower back pain **Shoulder injuries:** 1. Shoulder dislocation 2. Shoulder Instability 3. Shoulder impingement 4. Rotator cuff tear **Elbow injuries:** 1. Ligament injuries of the elbow 2. Tennis elbow 3. Golf elbow **Hip injuries:** 1. Labral injury of the hip 2. Pincer hip (femero acetabular impingement(	3

Internal Medicine in Relation to Sports Medicine

Topic
1) NEUROLOGY - Hemiplegia, - Paraplegia, - Peripheral neuropathy, - Myopathy, - Cranial nerves, Parkinsonism.
2) CARDIOLOGY - Hypertension, - Heart failure, - Pericardial effusion, - Ischemic heart disease.
3) NEPHROLOGY. - Glomerulonephritis, - Nephrotic syndrome, - Renal failure, - Heamaturia.
4) CHEST DISEASES - Tuberculosis, - Pleural diseases, - Bronchial asthma, - Chronic obstructive pulmonary disease (COPD), - Interstitial pulmonary disease,
5) BLOOD DISEASES - Anemia, - Hemorrhagic blood diseases, - Iron overload.
6) ENDOCRINE DISEASES - Diabetes, - Thyroid diseases, - Suprarenal gland diseases.
7) RHEUMATOLOGY - Gout
8) ACID-BASE BALANCE
9) Na^+ & K^+ ABNORMALITIES

Emergency Medicine

Topic
General surgical emergencies
Aanathesia & ICU
Trauma ATLS
ORTHOPEDIC EMERGENCIES
ENT emergencies
Neurosurgical emergencies
Cardiothoracic surgical emergencies
Ophthalmological emergencies
Obstetric & gynecological emergencies
Urological emergencies
Internal medicine emergencies
Cardiac emergencies
Chest emergencies
Neuropsychatry emergencies
Pediatric emergencies
Diagnostic radiological emergencies
X Infection control
Medical ethics
TRANSPLANTATION

Dermatology in Relation to Sports Medicine

Topic

• Diagnosis of skin diseases
• Allergic skin disorders
Urticarias
Disorders of blood vessels a- Rosacea Flushing
1- Disorders of sweat glands a- Hyperhidrosis • Miliaria
Disorders due to physical agents a- Dermatoses due to heat and cold Dermatoses due to UV radiation
Infections and infestations • Cutaneous pyogenic infections • Cutaneous viral infections • Mycology • Parasitic skin diseases
Regional dermatology
Sexual maturation (puberty) Puberty disorders
Testicular torsion
Varicocele
Total

Psychiatry in relation to sports medicine

1- **Psychiatry history and mental status**
2-Classification in psychiatry
3- **Mood Disorders**
3- **Anxiety Disorders**
4- **Schizophrenia and other psychotic Disorders**
5-Dissociative Disorders
6- **Alcohol, opioids and other substance related disorders**
7-Somatoform Disorders, Factitious disorders and Malingering
8- Child and adolescent Psychiatry
9- Delirium ,Dementia and Amnestic disorders
Organic mental disorders
11-personality disorders
12-Sleep disorders
13-Sexual dysfunction
14-Eating and impulse control disorders
15-Liaison psychiatry(and covid 19)
16-Psychotherapy

Service planning and administration Psychiatric disorders in women Guidelines of management of psychiatric □ Fever in psychiatry
Total