

Sona Medical Collge

Advanced Diploma in Sports Medicine

CURRICULUM & SYLLABI

Academic year – 2021-22

I Year / I Semester

S. No.	Course Code	Course Title	L	T	P	C
Theory						
1.		BASIC ANATOMY FOR SPORTS MEDICINE	3	0	0	3
2.		THE SKELETAL AND MUSCULAR SYSTEMS TO ANALYSE MUSCLE ACTION	3	0	0	3
3.		SPORTS BIOMECHANICS	2	0	0	2
4.		KINESIOLOGY	2	0	0	2
Total Credits						10

I Year / II Semester

S. No.	Course Code	Course Title	L	T	P	C
Theory						
1.		EXERCISE PHYSIOLOGY	3	0	0	3
2.		INTRODUCTION TO SPORTS INJURIES	3	0	0	3
3.		PRINCIPLES OF INJURY PREVENTION	3	0	2	4
Total Credits						10

II Year / III Semester

S. No.	Course Code	Course Title	L	T	P	C
Theory						
1.		BASIC APPLIED ANATOMY FOR SPORTS MEDICINE	1	0	0	1
2.		SPORTS BIOMECHANICS	2	0	0	2
3.		KINESIOLOGY	3	0	1	3.5
4.		EXERCISE PHYSIOLOGY	2	0	1	2.5
5.		SPORTS NUTRITION	1	0	0	1
Total Credits						10

II Year / IV Semester

S. No.	Course Code	Course Title	L	T	P	C
Theory						
1.		SPORTS PSYCHOLOGY	1	0	0	1
2.		ON FIELD SPORTS INJURY MANAGEMENT	2	0	1	2.5
3.		PROTECTIVE EQUIPMENTS, ERGOGENIC AIDS & DOPING	2	0	1	2.5
4.		COVERING ATHLETIC COMPETITION	2	0	0	2
5.		ON FIELD EMERGENCY MANAGEMENT	1	0	2	2
Total Credits						10

Semester I

UNIT I Basic Anatomy For Sports Medicine 3

The skeletal system - Functions of the skeleton - Classification of bones - The structure and growth of long bones – Joints - Classification of synovial joints - movements possible at synovial joints - Types of muscle - Structure and function of skeletal muscles - Actions of muscles on joints - Group muscle action - Types of muscle action - Force and levers.

UNIT II The Skeletal And Muscular Systems To Analyse Muscle Action 3

Range of movement at a joint - Factors affecting joint mobility - Movements at major joints - Muscles acting on major joints - Muscles involved in the performance of specific sports skills

UNIT III Sports Biomechanics 2

Biomechanics – Kinesiology - Sports Biomechanics - Definition, Meaning, Scope

UNIT IV Kinesiology 2

Kinematics - Linear kinematics - Angular kinematics -Kinetics -Linear Kinetics- Angular Kinetics - Definition, Meaning, Scope

TOTAL : 150 HOURS

REFERENCE BOOKS

1. **Atlas of Human Anatomy** by Frank H. Netter; ISBN: 1416059512; Publication Date: 2010-05-03
2. **Netter's Sports Medicine** by Christopher Madden; Margot Putukian; Eric McCarty; Craig Young; ISBN: 9781416049227; Publication Date: 2009-08-21
3. The sports medicine resource manual_Peter H,
4. **Sports Medicine Essentials, 3rd Edition; Author: Jim Clover; 2016**
5. **Introduction to Sports Medicine and Athletic Training, 3rd Edition; Robert C. France; 2020**

Semester II

UNIT-I EXERCISE PHYSIOLOGY 3

Neuromuscular junction and its important - Pain mechanism and its important - Rate of Energy expenditure during various sports - Actions of muscles

UNIT-II INTRODUCTION TO SPORTS INJURIES 3

Types of Injuries - Definition, Causes, Clinical Features - Management and Prevention of Soft Tissue Injuries: Skin Injuries - strain - Sprain contusion - cramp Tendon injuries – Bursitis - Bone injuries: Fracture - Subluxation-Dislocation - Importance of assessment & evaluation - Sports specific injuries, with special emphasis on the specific risk factor, nature of Sports, kind of medical intervention anticipated & prevention with respect to various sporting events.

- a. Individual events: Field & Track
- b. Team events: Hockey, Cricket, and Football
- c. Contact and Non-contact sports
- d. Water sports

UNIT-III PRINCIPLES OF INJURY PREVENTION 4

- A. Physical Conditioning
 1. Strength; 2. Balance; 3. Flexibility; 4. Endurance
- B. Appropriate Training Methods
- C. Rest and Recovery
- D. Muscle Soreness
- E. Appropriate Equipment
- F. Psychological Factors
- G. Training in Extreme Conditions

TOTAL: 150 HOURS

Reference Books

1. **Exercise physiology : nutrition, energy, and human performance; William D McArdle; Frank I Katch; Victor L Katch; Wolters Kluwer, 2014. ©2015.**
2. Sport and Exercise Science (2009)
3. ***Essentials of Strength Training and Conditioning, 4th Edition; G.Gregory Haff;NSCA publication.***
4. **Textbook of Sports Medicine: Basic Science and Clinical Aspects of Sports Injury and Physical Activity; Michael Kjaer; 2002**

PRACTICAL

L T P C

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- **EVALUATION OF PHYSICAL FITNESS**

- Assessment of components of physical fitness including functional tests:

muscle strength, flexibility, agility, balance, co-ordination, sensory deficits, cardio-pulmonary endurance.

- **Dealing with an emergency:**

Step 1: Make the area safe

Step 2: Evaluate the condition of the sick or injured person

Step 3: Seek help

Step 4: Provide first aid

- Hygiene and hand washing
- First aid overview flow chart
- Recovery position

TOTAL : 30 HOURS

Semester III

- UNIT 1** **BASIC APPLIED ANATOMY FOR SPORTS MEDICINE** **1**
The skeletal system - Functions of the skeleton - Classification of bones - The structure and growth of long bones – Joints - Classification of synovial joints - movements possible at synovial joints - Types of muscle - Structure and function of skeletal muscles - Actions of muscles on joints - Group muscle action - Types of muscle action - Force and levers.
- UNIT 2** **SPORTS BIOMECHANICS** **2**
Biomechanics – Kinesiology - Sports Biomechanics - Need and importance of Biomechanics & Kinesiology - Branches of Biomechanics - Statics and Dynamics - Force and its characteristics - Classification of force system - Composition and resolution of forces - Friction, impact- elasticity - Principles of Lever – Gravity - Methods of finding center of gravity - Principles of Equilibrium.
- UNIT 3** **KINESIOLOGY** **3**
Kinematics - Linear kinematics - Angular kinematics -Kinetics -Linear Kinetics- Angular Kinetics - Motion type of motion - Distance and speed - Displacement and velocity – Acceleration - Angular distance and Angular displacement, Angular Speed, Angular Velocity, Angular Acceleration, Inertia, mass - weight - Newton's Laws of motion - Units in linear and angular motion - Biomechanical characteristics of Walking - Biomechanical characteristics of Running - Biomechanics of Jumping - Mechanical characteristics of Throwing - Biomechanics of pushing and pulling.
- UNIT 4** **EXERCISE PHYSIOLOGY** **2**
Bioenergetics of exercise : High energy phosphates, - Anaerobic and aerobic ATP synthesis, - Bioenergetics Control - Exercise intensity & substrate utilization, - Protecting CHO stores, - Muscle adaptation to endurance training, - Processes that potentially limit the rate of fat oxidation, - Regulation of substrate utilization, - Training - induced increase in FFA oxidization - Basal metabolic and resting metabolic rates and factors affecting them - Classification of Physical Activities by energy expenditure. - Concept of MET, measurement of energy cost of exercise. - Respiratory responses to exercise - Cardiovascular responses to exercise - Exercise and Acid Base Balance - Hormonal responses to exercise
- UNIT 5** **SPORTS NUTRITION** **1**
Nutrition metabolism of Carbohydrate, fats and proteins, vitamin, mineral and water - Optimum nutrition for exercise, - Nutrition for physical performance, - Pre-game meal and Post game meal, - Carbohydrate loading, - Glycemic index, - Fluid and energy replacement in prolonged exercise.

Total hours: 150 hours

REFERENCES:

- 1. Textbook of Sports Medicine; by Laila Das; 2006.**
- 2. Sports Injuries & Therapeutic Modalities; Dr.V.D.Bindal; 2019.**
- 3. Nutritional Guidelines for Sportspersons; by Geetanjali Bhide, Subhadra Mandalika; 2018.**
- 4. Sports Biomechanics: The Basics: Optimizing Human Performance: The Basics: Optimising Human Performance; Anthony Blazeovich Paperback – 15 November 2010.**
- 5. Kinesiology: The Mechanics and Pathomechanics of Human Movement, 3rd edition Hardcover – 1 December 2016; by Carol A Oatis PT PhD**

Semester IV

UNIT-I SPORTS PSYCHOLOGY	1
Meaning and definition of Sports Psychology - Attention, concentration and perception in sports - Motivational orientation in sports - Relaxation Training (Definition, Types of relaxation trainings Progressive muscle relaxation, Breathing exercises, Transcendental meditation) - Role of Psychology in Dealing with injuries.	
UNIT-II ON FIELD SPORTS INJURY MANAGEMENT	2
PREPARTICIPATION SCREENING: Essentials - Objectives - Prospective Athlete: Prepubescent Athlete - Pubescent athlete -Post pubescent/Young adult athlete - Adult athlete - Elderly athlete. Contemplated exercise programed - Motivation - Implementation - Frequency - Timing - History - Physical examination - Assessment - Injury prediction.	
UNIT-III PROTECTIVE EQUIPMENTS, ERGOGENIC AIDS & DOPING	2
Protective Equipment: Different types of Equipment and its importance. Ergogenic aids & Doping: Anabolic-androgenic - Erythropoietin-Alcohol - Marijuana - Cocaine - Methamphetamine. WADA's list of prohibited substances and methods	
UNIT-IV COVERING ATHLETIC COMPETITION	2
The Sports medicine team - Role of Physiotherapist, Team physician, Coach, Emergency medical services - Recommended Equipment - The Medical Bag & Sideline supplies - Recommended Medications Preparation for sideline coverage: Preseason preparation checklist Game day preparation checklist- timing - Special Sports coverage settings : International events - Mass preparation events.	
UNIT-V ON FIELD EMERGENCY MANAGEMENT	2
Onsite management of the collapsed athlete triage - The primary abcd survey: airway and cervical spine breathing circulation defibrillation the glasgow coma scale Secondary abcd survey - Potential causes of on field emergencies - system evaluation : Head and neck Brain injury Intracranial haemorrhage - Epidural Haematoma - Subdural haematoma - subarchanoid haematoma - Intracerebral haematoma. Cervical spine fractures / dislocations Laryngeal fracture Cardiac emergencies - Respiratory emergencies - Orthopaedic conditions: Posterior Sternoclavicular dislocation - Fat embolism Hip dislocation - Knee dislocation - Environmental emergencies.	
TOTAL : 150 HOURS	

Reference Books:

1. **Sport Psychology: A Complete Introduction (Teach Yourself) Paperback – 14 January 2016; by John Perry (Author).**
2. **Fundamentals of Sports Injury Management Paperback – 3 March 2011; by Marcia K. Anderson**
3. **Manual of FIRST AID: Management of General injuries, Sports injuries and Common Ailments Paperback – 1 January 2012; by Rai Py (Author).**
4. **Introduction to Emergency Management Hardcover – 12 October 2010; by George Haddow**

PRACTICAL

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0 0 2 1

- **FIRST AID TECHNIQUES: DRESSINGS, BANDAGES AND TRANSPORT TECHNIQUES**
- **DRESSINGS**
 - Types of dressings
 - How do I apply a dressing?
- **BANDAGES**
 - Types of bandages
 - Roller Bandages
 - Crepe bandages
- **FAST EVACUATION TECHNIQUES (SINGLE RESCUER)**
 - Shoulder pull
 - Ankle pull
- **RESUSCITATION (BASIC CPR): a.) Resuscitation of a person who is not breathing or not breathing normally; b.) Resuscitation of baby/child (less than one year old) who is not breathing or not breathing normally; c.) When to refer to a healthcare facility**
- **TRANSPORT TECHNIQUES**
 - Single helper transport
 - Multiple helper transport
- **STRETCHERS**
 - Loading a stretcher
 - Lifting and lowering a stretcher
 - Carrying a loaded stretcher
 - Loading a stretcher into an ambulance
- **MOVING AND TRANSPORTING A CASUALTY SUSPECTED OF A HEAD, NECK OR SPINAL INJURY**

TOTAL : 30 HOURS