SCHEME OF EXAMINATION

&

SYLLABI

OF

MASTER OF PHYSIOTHERPY
(SPORS)
(Two Years Programme)

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
KASHMERE GATE, DELHI
<table>
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<tr>
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**Practical**

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**Total** 16 18 50

*Yearly Credits have been calculated by multiplying the Semester – wise credits by two for theory papers.

**NUES stands for Non University Examination Subject
SYLLABUS FOR MPT SPORTS

MPT (Sports) Second Year

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*Yearly Credits have been calculated by multiplying the Semester – wise credits by two for theory papers.
**NUES stands for Non University Examination Subject
*** The contact hours for dissertation would depend on the subject hence the credits have directly been shown in the final column.

Total Credits of the program are ---100
Every student will be required to register themselves for all courses of the Programme and shall also be required to take up examination to all courses; however a student shall be entitled to award of the degree if he or she is able to earn 100 credits
# Syllabus for MPT Sports

**Name of the Institute/College**

Ref No: ___________________________
Enrolment No.: ____________________

**Name:** __________________________
**S/D of:** ________________________

Masters of Physiotherapy (Sports) (2 years programme)

**Medium of instruction:** English

**Date of admission:** _______________  **Date of Completion:** _______________

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## Curriculum Hours

**First Year**

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**Second Year**

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**Date:** __________

**Head, Department of Physiotherapy**

**Head of the Institution & Seal**
Unit – I  Applied General Clinical Anatomy

1. Anatomy of the Nerve Injuries
   a. Anatomical and Physiological loss resulting from nerve injury.
   b. Peripheral nerve entrapment

2. Anatomical Angles and stiff joints
   a. Anatomical Angles
   b. Snapping Joints

3. The pathology of nerve, bones in terms of anatomy
   a. Anatomical facts regarding bones
   b. Anatomical disturbances in various bone pathologies

4. Anatomy of certain diseases
   a. Headache
   b. Infections of the hand
   c. Common dislocations
   d. Lesions of Supraspinatous and Subdeltoid Bursae
   e. Hernias associated with sports persons
   f. Low back pain
   g. Sciatica
   h. Lesions of inter-vertebral disk
   i. Abscesses of Spine

Unit – II  Applied General Physiology

1. Blood
   a. The various components of blood
   b. Viscosity correlation
   c. Oxyhemoglobin Dissociation curves
   d. Interrelationship between pressure flow and resistance
   e. Pressure volume curves
   f. Stress relaxation of vessels

2. Cardiovascular system
   a. Physical characteristics of systemic circulation
   b. Pressure pulses
   c. Oxygen demand theory of local blood flow circulation
   d. Nervous control of blood circulation
   e. Humorous control of blood circulation
   f. Mechanisms of arterial pulse regulation
   g. Hypertension
   h. Cardiac output and its regulation
   i. Cardiac output in normal stress conditions
   j. Methods of measuring cardiac output
   k. Normal coronary blood flow along with variations
   l. Physiological basis of ischemic heart disease
   m. The cardiac reserve
   n. Physiological causes of shock
3. **Neuromuscular System**
   a. Basic physics of membrane potentials
   b. Recording of membrane potentials and action potentials with basics of Electromyogram
   c. Mechanism of muscle contraction
   d. Sources of energy for muscle contraction
   e. Neural control of movement

4. **Respiratory System**
   a. Review of mechanics of respiration
   b. Pulmonary volumes and capacities
   c. Composition of Alveolar air
   d. Transport of oxygen in blood
   e. Carbon dioxide in blood
   f. Regulation of respiration
   g. Methods of studying respiratory abnormalities

5. **Temperature regulation**
   a. Regulation of body temperature

6. **Endocrine System**
   a. Pituitary hormones and their functions
   b. Thyroid hormones
   c. Adrenocortical hormones
   d. Insulin Glucagon hormones
   e. Parathyroid hormones

**Unit – III Pathology**
1. Inflammation and repair
2. “Failed” healing responses
3. Regional considerations of Inflammation & repair of soft tissue injuries.

**Unit – IV Pharmacology**
2. Basic pharmacokinetics and Pharmacodynamics.
3. The use of drugs in various musculoskeletal disorders.

**Unit – V Radiology**
1. Basics of Imaging Techniques
   a) Fluoroscopic Examination
   b) CT Scan
   c) Radionuclide Scanning
   d) MRI
   e) Ultrasonography
   f) X-Ray
   g) Bone Scan
   h) Dexa Scan
2. Imaging in Common Sports Injuries
   a) Head and Neck.
   b) Spine.
   c) Pelvis, hip and thigh.
   d) Patella Femoral Joint & Knee joint.
   e) Lower leg, foot and ankle.
## SYLLABUS FOR MPT SPORTS

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SYLLABUS FOR MPT SPORTS

KINESIOLOGY AND BIOMECHANICS

Course code MPT (S) 102 L-3 T/P-0 CREDITS-6

Part-A Kinesiology

Unit – I  
Introduction & Mechanical Principles: Kinematics
1. Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
2. Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.

Unit – II  
Mechanical Principles: Kinetics
-Force and its characteristics, internal and external forces, Classification of force system, Composition and resolution of forces. Friction, Impact, Elasticity, Principles of Spin and Rebound, Eccentric forces. Couple, moment, Principles of Lever, Rotatory force, Gravity, Methods of finding Centre of Gravity, Principles of Equilibrium, Fluid mechanics, principles of projectile.

-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.

Unit – III  
Anatomical Concepts in Kinesiology
Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Unit – IV  
Aspects of Muscle Physiology
1. Physical Properties of bone, cartilage and muscle and functional adaptation under pathological conditions.
2. Origin, insertion, nerve supply and action of all important muscles related to human movement.

Part-B Biomechanics

Unit – I  
Introduction
-Nature and importance of Biomechanics in Sports Physiotherapy.
-Principle of Biomechanics.

Unit- II  
Movement Analysis
-Biomechanics of shoulder and shoulder girdle motion, elbow motion, wrist and hand motion.
-Biomechanics of pelvic motion, hip motion, knee motion, ankle & foot motion
-Biomechanics of spinal motion.
-Gait analysis
-Biomechanical Analysis & Techniques – Isokinetic dynamometer, Kinesiological EMG, Electronic goniometry, Force platform, Videography

Unit – III  
Sports Specific Biomechanics
-Biomechanics of rowing, throwing, swimming, jumping and landing, running and other sports.
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<td>F.A. Davis</td>
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<td>James G. Hay</td>
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<td>Kreighbaum E., Barthels K</td>
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<td>MacMillan</td>
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Objective: On completion of the study of this subject the student should be able to:

Enumerate the steps in Physiotherapy Research Process

Acquire the skills of reviewing literature, formulating a hypothesis, collect data, writing research proposal etc.

Describe the importance & use of biostatistics for research work

Section 1
Research Methodology

1. Research in Physiotherapy

Introduction
Research for Physiotherapist: Why? How? And, when?
Research – Definition, concept, purpose, approaches
Internet sites for physiotherapists

2. Research Fundamentals

Define measurement
Measurement framework
Scales of measurement
Pilot study
Types of variables
Reliability & Validity
Drawing tables, graphs, master chart etc.

3. Writing a research proposal, critiquing a research article

Defining a problem
Review of literature
Formulating a question, operational definition
Inclusion and Exclusion criteria
Forming groups
Data collection & analysis
Results, Interpretation, Conclusion, Discussion
Informed consent
Limitations

4. Research Design

Principle of designing
Design, instrumentation & analysis for qualitative research
Design, instrumentation & analysis for quantitative research
Design, instrumentation & analysis for quasi-experimental research
Design models utilized in Physiotherapy

5. Research Ethics

Importance of Ethics in Research
Main ethical issues in human subjects’ research
Main ethical principles that govern research with human subjects
Components of an ethically valid informed consent for research
Section II

Biostatistics

1. Biostatistics

   Introduction
   Definition
   Types
   Application of Physiotherapy

1. Data

   Definition
   Types
   Presentation
   Collection methods

2. Measures of Central value

   Arithmetic mean, median mode, Relationship between them
   Partitioned values – Quartiles, Deciles, Percentiles
   Graphical determination

3. Measures of Dispersion

   Range
   Mean Deviation
   Standard Deviation

4. Normal distribution Curve

   Properties of normal distribution
   Standard normal distribution
   Transformation of normal random variables.
   Inverse transformation
   Normal approximation of Bioaxial distribution.

5. Correlation Analysis

   Bivariate distribution:
   Scatter diagram
   Coefficient of correlation
   Calculation & interpretation of correlational coefficient
   T-test, Z-test, P-value

6. Regression analysis

   Lines of regression
   Calculation of Regression Coefficient
7. Sampling

- Methods of Sampling
- Sampling distribution
- Standard error
- Types I & II error

8. Probability (in brief)

Basic Definition: Events, sample space and probabilities.

Basic rules for probability:

- The range of values.
- The Rule of complements
- Mutually exclusive events
- Conditional probability
- Independence of events
- Combinatorial concepts
- Law of Total probability and Baye’s theorem

9. Hypothesis testing

- Null Hypothesis
- Alternative hypothesis
- Acceptance & rejection of null hypothesis
- Level of significance

10. Parametric & Non Parametric tests

- Chi square test
- Mann-Whitney U test
- Wilcoxon Signed test
- Kruskal-Wallis test
- Friednam test
- T-test/student T test
- Analysis of variance
# References:

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SYLLABUS FOR MPT SPORTS

SPORTS INJURIES DIAGNOSIS & MANAGEMENT-I

Course code MPT (S) 104        L-3                              T/P-0            CREDITS-6

1. Pre-participation examination
3. Common acute and overuse injuries of:
   - Shoulder girdle, Arm, Elbow, Forearm, Wrist & hand
   - Pelvis, hip, thigh, knee, leg, ankle & foot
   - Spine
   - Head
   - Injuries to Athletes in various age groups.

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SYLLABUS FOR MPT SPORTS

SPORTS PHYSIOTHERAPY METHODS

Course code MPT (S) 105      L-3                        T/P-0                            CREDITS-6

Unit – I  
Rehabilitation and Therapeutic Exercises

1. Define Rehabilitation, Goals and Objectives of Rehabilitation in Sports, Clinical Evaluation phases of rehabilitation. (multidisciplinary approach)
2. Prehabilitation
3. Definition, details of effects and uses of therapeutic exercises.
   a. Dynamic Exercises
   b. Plyometric Exercises
   c. Isokinetic Exercises
   d. Kinetic chain exercises

Unit – II  
Mobilization and Strengthening Techniques

1. Factors affecting the joint range of motion prevention of stiffness, methods of joint mobilization.
   a. Testing for tightness and contracture of soft-tissue structures.
   b. Techniques of mobilizing the various joints of the body.
2. Types of Muscle Contractions and Muscle work, Strength of Muscle Contraction in terms of Motor units, Group action of muscles and its implication in designing an exercise program.
   b. Techniques of strengthening with respect to regional consideration.
   c. Various methods of progressive resisted exercise.
3. Health club & fitness: Concept, group therapy

Unit – III  
Neuromuscular Training

1. Neuromuscular control, methods for improving neuromuscular control, proprioception and kinesthetic sensation following different sport injuries.
2. Principles and application of neuromuscular facilitation techniques including PNF in sports.

Unit – IV  
Massage

Historical development. Definition and classification of massage techniques, Physiological effects of massage, Description of the techniques of the classical massage. Connective tissue massage and myofascial release, physiological basis of sports massage and various categories, underwater massage, mechanical devices of massage, therapeutic applications and contraindications of massage.

Unit – V  
Heat Therapy

1. Production, Physiological effects, indications, contraindications and specific uses in sports of the following:

Unit – VI  
Hydrotherapy

SYLLABUS FOR MPT SPORTS

Unit – VII  Electrotherapy

1. Principles underlying the application of following modalities with reference to their production, biophysical and therapeutic effects, indications and contraindications. Clinical Implication and the technique of application with specific uses in Sports Physiotherapy
   a. Low Frequency Current:- Direct Current, Modified Direct Current, Alternative Current, Diadynamic Current, Iontophoresis
   b. TENS, High Voltage, Pulsed Galvanic Stimulation.
   c. Medium Frequency Current:- IFT, Russian Currents.
   d. High Frequency Currents:- SWD, MWD, Ultrasound, Pulsed Electromagnetic Energy.
   e. Radiations: LASER, UVR

2. Electro diagnosis and its implications to Sports Physiotherapy.

Unit – VIII  Functional Bandages and Orthotic Aids & Protective Equipment in Sports

History and uses of functional bandages, classification according to the time of application, types of bandages, Bandaging techniques and bandaging material, Indications, contraindications, Taping Techniques, athletic shoes and modifications, common orthotic aid and protective equipments in Sports.

Unit – IX  Cryotherapy

Physiological effects, Use of cold therapy in acute phase, rehabilitative phase, preventive phase of athletic injury, Methods of application, Indications and contraindications.

Unit – X  Manual Therapy

Introduction to Manual therapy techniques, Traction, Neural mobilization, Trigger point therapy and Muscle energy techniques.

Unit – XI  Clinical Reasoning and decision making

Clinical reasoning and clinical decision making - nature and context
Reasoning, Expertise and Knowledge
Clinical reasoning and clinical decision-making approaches
Teaching and learning clinical reasoning

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</table>
1. Nutrition in Sports
   a. Food : The ultimate drug
      - Energy requirement
      - Weight Loss & Weight Gain
      - Carbohydrate Requirement & Glycemic Index
      - Carbohydrate: Needs of Strength & Endurance Athletes
      - Pre & Post Exercise Carbohydrate Intake
      - Protein requirement and needs of Athlete
      - Fats requirement and needs of Athlete
   b. Water and Electrolyte Loss and Replacement in Exercise
   c. Vitamins are Athletes Needs, Megavitamin & Antioxidants
   d. Nutritional Ergogenic Aids and Supplements
   e. Pre competition Meal and Carbohydrate Loading
   f. Sports Specific Nutrition: Sprinting, Distance Running, Cycling, Swimming, Weight Lifting & Power Sport and team Sport
   g. Fluid and energy replacement in prolonged exercise.

2. Energy Transfer for Physical activity:
   b. Energy transfer in exercise.
   c. Energy expenditure during various activities.
   d. Fatigue.
   e. Biochemical responses to endurance training.

3. Cardio Vascular System and Exercise:
   a. Athletes Heart.
   b. Cardio Vascular adaptations to sustained aerobic exercises.
   c. Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile.
   d. Sudden cardiac death in sports.
   e. Regulation of circulation during exercise.

4. Exercise and Respiratory System:
   a. Air Conditioning.
   b. Second Wind.
   c. Oxygen Debt.
   e. Athletes Lung.
   f. Regulation of Respiration during exercise.

Skeletal System:
   a. Growth and Exercise.
   b. Repair and adaptation during exercise.
   c. Pathophysiology of Back.
   d. Training for Muscular Strength and Endurance.
SYLLABUS FOR MPT SPORTS

Gastrointestinal Tract and Endocrine system:

a. Effect of Sports on GIT and Liver.
b. Hormone regulation of fluid and electrolytes during exercise.
c. Exercise and Menstrual Cycle.
d. Stress Hormones in Exercise.
e. Effects of exercise on various Hormones in the body.
f. Opiods, Runners High.

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</table>
1. **History and current status of Sports Psychology.**

2. **Personality Assessment and Sports personality.**
   a. Theories of personality
   b. Personality assessment

3. **Attention and Perception in sports.**
   a. Attention
   b. Perception

4. **Pre-competitive anxiety.**
   a. Source of PCA
   b. Effect of PCA on performance

5. **Aggression in sports.**
   a. Theories of aggression
   b. Management of aggression

6. **Eating disorders.**
   a. Etiology of eating disorders
   b. Types of eating disorders
   c. Complications of eating disorders

7. **Role of Psychology in Dealing with Injuries.**

8. **Group Behavior and leadership**
   a. Nature of group behavior and group.
   b. Types of group.
   c. Educational implication of group behavior.
   d. Meaning of leadership, types of leadership quality of leadership, training and functioning of leadership.

9. **Emotion**
   a. Meaning of emotion.
   b. Characteristics of emotion.
   c. Meaning of controlling and training of emotions and its importance.
   d. Contribution of sports to emotional health.
   e. Meaning of sentiment, its type, importance and formation.

10. **Clinical Training**
    a. Students will undergo Field Training with Sportsmen.
    b. They will attend Sports medicine clinic.
    c. Field Training at various Stadiums of New Delhi.
    d. The students will accompany sports teams for National sporting competitions.

11. **Goal setting**

12. **Psychological aspect of doping**

13. **Psychological preparation of elite athletes**
    a. Concept of psychological preparation
14. Biofeedback training

15. Mental imagery

16. Stress management
   a. Principles of Stress Management
   b. Stress Management techniques

17. Concentration training in sports.
   a. Basic principles of concentration
   b. Concentration training
   c. Concentration awareness exercises

18. Motivational orientation in sports.
   a. Athlete’s needs of motivation
   b. Motivational inhibitors
   c. Motivational techniques

   a. Definition
   b. Types of relaxation trainings
   c. Progressive muscle relaxation
   d. Breathing exercises
   e. Yognidra
   f. Transcendental meditation

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SYLLABUS FOR MPT SPORTS

ASSESSMENT & EVALUATION IN SPORTS PHYSIOTHERAPY

Course code MPT (S) 151    L-0                          T/P-6            CREDITS-6

1. Importance of assessment & evaluation, Methods of evaluation – Interview, Clinical Examination, Reliability & Validity of the tests, Investigative Procedures, Field Tests.

2. Evaluation of Physical Fitness:

3. Musculoskeletal screening

4. Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot

5. Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand.

6. Assessment of spinal column: Cervical, thoracic and lumboscaral, Tests of neural tension.

7. Assessment of Gait deviations.

8. Basic Wheelchair skills
   a. Assessment and Training.
   b. Fundamentals of wheelchair Sports.

9. First Aid, Emergency medical skills and On field Management.

10. EMG evaluation, diagnostic and kinesiological

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Course objective: The student will learn approach to patient, collection of demographic data, art of history taking and bedside/ OPD/ on-field manners in relation to the patient. The student will be posted in the department of Physiotherapy & the sports clubs/ organizations/ teams associated with the hospital and he/she will do the assessment of the patients visiting the respective destinations. Students will be taught the basic fundamentals of computer science and information technology, helping them in carrying out research and penning the dissertation.

Examination

There will be no university examination. The students will be awarded marks on the basis of his/her attendance & performance during clinical postings at the destinations attached with institute.
Pedagogy in Physiotherapy Education

Course Code MPT (S) 201 L-2 T/P-0 Credit-4

Following are the topics to be included but not limited to:

1) Education
   a. Introduction
   b. Educational Philosophy – Idealism, Naturalism, Pragmatism
   c. Aims of Education
   d. Functions of Education
   e. Formal, informal and non-formal education
   f. Agencies of Education
   g. Current issues and Trends in Higher Education
   h. Issue of quality in Higher Education
   i. Autonomy and Accountability
   j. Privatization of Education

2. Concept of Teaching and Learning
   a. Meaning and scope of Educational Psychology
   b. Meaning and Relationship between teaching and learning
   c. Learning theories
   d. Dynamics of behaviour
   e. Individual differences

3. Curriculum
   a. Meaning and concept
   b. Basis of curriculum formulation
   c. Framing objectives for curriculum
   d. Process of curriculum development and factors involved
   e. Evaluation of curriculum

4. Method and techniques of teaching
   a. Lecture
   b. Demonstration
   c. Discussion
   d. Seminar
   e. Assignment
   f. Project
   g. Case study

5. Planning for teaching
   a. Bloom’s taxonomy of instructional objectives
   b. Writing instructional objectives I behavioral terms
   c. Unit planning
   d. Lesson planning

6. Teaching Aids
   a. Types of teaching aids
   b. Principles of selection, preparation and use of audio-visual aids
SYLLABUS FOR MPT SPORTS

7. Measurement and Evaluation
   a. Nature of educational measurement: meaning, process, types of tests
   b. Construction of an achievement test and its analysis
   c. Standardized test
   d. Introduction of some standardized tools, important tests of intelligence, aptitude and personality
   e. Continuous and comprehensive evaluation

8. Guidance and Counselling
   a. Meaning and concepts of guidance and counselling
   b. Principles of guidance and counselling

9. Awareness of Programme
   a. Awareness and guidance to the common people about health and disease

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SYLLABUS FOR MPT SPORTS

Administration, Management & Ethics

Course Code- MPT(S) 202          L-2                         T/P-0                             Credits-4

Unit – I – Sports Management
- History of Sports
- Sports and Recreational Events
- Financial and Corporate Management in Sports – clubs, events
- Marketing and Management
- International Relations and Business
- Organizational Behavior and Culture
- Sports Economics

Unit –II – Administration
- Functions of management
- Fundamentals of hospital administration
- Management Process – Planning, Organization, Direction, Controlling, Decision Making
- Personnel Management – Staffing, Recruitment Selection, Performance appraisal, Collective bargaining, Job Satisfaction.
- Total Quality management – basics, quality control, quality assurance programme in hospitals and medical audit, International Quality System, Six Sigma approach
- Just in Time approach.

Unit – III – Ethics & Legal Issues
- Rules of Professional conduct
- Legal responsibility
- Code of ethics
- Functions of Physiotherapy associations
- Role of International health agencies
- Standards of practice for Physiotherapists
- Liability and obligations in the case of medical legal action
- Law of disability and discrimination
- Confidentiality of the Patient’s status
- Consumer Protection Law, Health law, MCI, DCP

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<th>Master Alexis, Carol A Barr, Mary A Hums</th>
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MEDICAL CONDITIONS IN SPORTS PERSONS

Course code MPT (S) 203  L-3  T/P-0  CREDITS-6

Unit – I
Illness, Infections, Hypertension, Urine abnormalities; Venereal Diseases; Exercise induced Asthma; Anemia, Delayed onset muscle soreness (DOMS), Runner’s high & exercise addiction. G.I.T. Diseases, Exercises and congestive heart failure, exercise for post coronary & bye-pass patients, exercise for diabetics.

Unit – II
Diagnosis and management of skin conditions of Athletes, Bacterial infections, Fungal infections, Viral infections, boils and cellulitis.

Unit – III  Female Specific problems
2. Injury to female reproductive tract.
4. Sex determination.
5. Exercise and pregnancy.

Unit – IV
1. Common Diseases: Common Cold, Diarrhea, Dysentery, Typhoid, Cholera, Amoebiasis, Food Poisoning, Tuberculosis, Malaria, Hepatitis etc.
2. AIDS in sports people.

Unit – V  Geriatric disorder
1. Older Athletes
2. Osteoarthrosis and other geriatric conditions.

Unit – VI  Exercise and Common Pulmonary Conditions
a. Exercise induced bronchial obstruction
b. Exercise in chronic airway obstruction
c. Air pollution and exercise

Unit – VII  Exercise and Cardiac Conditions
a. Exercise prescription for heart disease
b. Exercise in primary prevention in ischemic heart disease
c. Exercise for secondary prevention of ischemic heart disease

Unit – VIII  Doping in Sports
a. Banned drugs
b. Procedure of dope testing
c. Control of doping abuse

Unit – IX  Diabetes and Exercise
a. Exercise in diabetic patients
b. Exercise as a method of control of diabetes
SYLLABUS FOR MPT SPORTS

Unit – X  Exercises for special categories
a. Child and adolescent athlete’s problems
b. Special problems of older athletes
c. Special concerns for handicapped athletes

Unit – XI  Misc. Conditions
a. Hazards of cold water
b. Exercise for mood enhancement
c. Spinal deformity and sports
d. Time zone shift and sleep deprivation problems
e. Exercise in pregnancy and post partum

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SYLLABUS FOR MPT SPORTS

SPORTS INJURIES DIAGNOSIS & MANAGEMENT-II

Course code MPT (S) 204                   L-3                         T/P-0                            CREDITS-6

Unit – I – Trauma Management

1. Emergency Situations, Primary and secondary emergency assessment, emergency plan, moving the injured participant.

2. Cardio Pulmonary Resuscitation; Shock management, Internal and External bleeding, Splinting, Stretcher use-Handling and transfer, Management of Cardiac arrest, Acute asthma, Epilepsy, Drowning, Burn, Medical management of mass participation. Heat stroke and Heat illness.

3. Sports specific injuries, with special emphasis on the specific risk factor, nature of sports, kind of medical intervention anticipated and prevention with respect to individual sports
   a. Individual events: Field & Track
   b. Team events: Hockey, Cricket, Football
   c. Contact and Non-contact sports
   d. Water sports

4. Protective Equipments:
   Principles of protective equipment
   Protective Equipment for: Head & Face, Upper & Lower Extremity

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SYLLABUS FOR MPT SPORTS

LATEST ADVANCEMENTS IN SPORTS MEDICINE

Course code MPT (S) 205    L-2        T/P- 0        CREDITS-4

1. Segmental Stabilization Concepts of Spine
   a. Muscle function in spinal stabilization
   b. Contribution of various muscles to spinal stabilization
   c. Local Muscle dysfunction in Low back pain
   d. Principles of clinical management of deep muscle system for segmental stabilization

2. Emergency Medical Planning and cover for Sports Events
   Treatment of collapsed athlete
   Severe head injury
   The athlete with spinal injury
   Chest injuries
   Abdominal injuries
   Injuries to the extremities
   Causes of Collapse

3. Exercise for growing bones

4. Effect of Physical activity intervention in youth
   Cardiac Adaptations
   Exercise and the skeleton
   Respiratory adaptations of athletes to exercise
   Training induced adaptation in skeletal muscles

5. Precision heart rate training
   a. Heart rate monitoring and training
   b. Training in heart zones
   c. Precision heart rate training for specific sports
   d. Multi Activity training
   e. Monitoring of training effects

6. Current concepts in obesity management
   a. Childhood obesity etiology and role of exercise
   b. Obesity correlation with lipidogram
   c. Intra-abdominal obesity hazards
   d. Management of obesity

7. Electromyography and Rehabilitation
   a. Principles of EMG Rehab
   b. Muscular tone, fatigue and neural influences
   c. EMG in the evaluation of Sports Trauma

8. Isokinetics in Rehabilitation
   Introduction to isokinetics
   Isokinetic Technology: A global exchange
   Applications

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Seminars and Groups Discussions
It will be mandatory for the students to conduct seminars on the latest trends in sports medicine & sports physiotherapy.

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</table>
Course code MPT (S) 206   L-3                          T/P-0                       CREDITS-6

1. **Body composition**
   a. Composition of human body.
   b. Somatotyping
   c. Various methods to estimate body composition
   d. Water displacement method
   e. Under water weighing methods
   f. Kin anthropometric determination of the body composition (skin fold thickness)
   g. Application of surface anthropometry (the body profile)
   h. Bioelectrical impedance analysis
   i. Ultrasound assessment of fat
   j. Arm X-ray assessment of fat
   k. Computed tomography (CT) assessment of fat

2. **Aging and Exercise**
   a. Aging and Physiological function.
   b. Exercise and Longevity.
   c. Coronary Heart Disease and Exercise.
   d. Exercise Stress Testing for Diagnosis of CHD.
   e. Exercise prescription for healthy aged.
   f. Exercise prescription for sedentary adults.
   g. Cost and benefits of exercise prescription in Osteoporosis.

3. **Temperature Regulation**
   c. Effects of Climate.
   d. Effects of Exercise on Temperature Regulation.
   e. Limit of Tolerance of Heat.
   f. Acclimatization.
   g. Avoidance in Heat illness during exercise.
   h. Exercises in cold.

4. **Misc. Topics**
   a. High Altitude Training.
   b. Sports Diving, Hazards of underwater environment.
   c. Special Aids to Athletic Performance: - MORA, Oxygen Inhalation, Sleep.
   d. Sex and performance.
   e. Assessment of Age.
   f. Muscle tissue fibre typing and its significance.
   g. Exercise for mood enhancement & anxiety.

5. **Physiological Basis and Principles of Training and Conditioning**
   a. Principles of endurance and strength training
   i. Recovery training intensities in heart rate
SYLLABUS FOR MPT SPORTS

ii. Manipulation of training principles

iii. Training sub-phases

b. Fundamentals that aid training and performance

i. Warm up and Cool down

ii. Flexibility and stretching

iii. Missing workouts

iv. Overtraining

c. Analysis of Training

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ASSESSMENT, EVALUATION & MANAGEMENT IN SPORTS PHYSIOTHERAPY

Course code MPT (S) 251    L-0                          T/P-6            CREDITS-6

1. Importance of assessment & evaluation, Methods of evaluation – Interview, Clinical Examination, Reliability & Validity of the tests, Investigative Procedures, Field Tests.

2. Assessment & management of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot

3. Assessment & management of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand.


5. Assessment & management of Gait deviations

6. Advanced wheelchair skills
   a. Assessment and Training
   b. Wheelchair sports

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| Sr. No. | Author                          | Title                                                                 | Publisher       | Year  | Vol. |
|---------|---------------------------------|                                                                     |                 |       |      |
| 1       | Norkin & White                  | Measurement of Joint Motion – A Guide to Goniometry                | F.A. Davis      | 2003  | 3    |
| 2       | Dvir                            | Isokinetics: Muscle Testing, Interpretation and Clinical Applications | W.B. Saunders  | 2004  | 2    |
| 3       | Reid                            | Sports Injuries – Assessment and Rehabilitation                    | W.B. Saunders  | 1992  | 2    |
|         |                                 |                                                                     | Heinemann       |       |      |
| 5       | Baker                           | The Hughston Clinic Sports Medicine Book                           | Williams & Wilkins | 1995  | 2    |
| 6       | Jose Antonio & Jeffrey R. Stout | Sports Supplements                                                  | Lippincott     | 2008  | 1    |
Course code MPT (S) 252  L-0  T/P-6  CREDITS-6

Course objective: The student will learn approach to patient, collection of demographic data, art of history taking and bedside/ OPD/ on-field manners & management in relation to the patient. The student will be posted in the department of Physiotherapy & the sports clubs/ organizations/ teams associated with the hospital and he/ she will do the assessment & management of the patients visiting the respective destinations.

Examination

There will be no university examination. The students will be awarded marks on the basis of his/ her attendance & performance during clinical postings at the destinations attached with institute.
**DISSEMINATION**

Course code MPT (S) 253    L-0                          T/P-8            CREDITS-8

Student will select a topic in his/ her area of interest, in consultation with a supervisor/ guide qualified for the purpose as recommended by the council/ university, and carry out an independent dissertation, which will involve making research proposal, conduct of the work as per the documented methodology, statistical analysis, dissertation writing. The work will build on the knowledge acquired through the study of the research methodology and biostatistics. Each candidate shall submit three typed written copies of a dissertation and it should be submitted well in advance before the date of written, oral, clinical & practical examination. Acceptance of the dissertation by the examiners should be a precondition to sit in the annual examination.

Evaluation of the dissertation will be done by the examiner (s) appointed by Vice Chancellor of the University.