

Jamia Millia Islamia MPT Entrance Syllabus : 2021-22

The MPT entrance examination is based on the curriculum of BPT followed by various universities in India. The topics under each subject is mentioned below and the syllabus is not limited to the particular topics.

1. HUMAN ANATOMY

Definition of anatomy , its sub-divisions, regions, cavities and systems of the body. Anatomical positions and anatomical terms.

Cell & Tissue (Histology): Anatomical nomenclature, structure of cell, reproduction of cell, tissue, its types and functions.

Osteology: Development and growth of bone, blood & nerve supply, bones: type & structure, surface anatomy. Osteology of skull, shoulder girdle upper limb, pelvis, lower limb and spine.

Arthrology: Definition and classification, general features of all the type of joints. General description about movements at all the joints.

Myology : Muscle and its classification, tendon, ligament, aponeurosis & fascia. Features, description of all the muscle types and various anatomical spaces

Nervous system, cardiovascular system, lymphatic systems, respiratory system, digestive system endocrines system, urogenital system and human embryology.

2. HUMAN PHYSIOLOGY & BIOCHEMISTRY

Functional system of the cell: Cell and its functions, functional morphology, extracellular fluid and intracellular fluid

Membrane, nerve & muscle physiology, mechanism of contraction of skeletal muscle and smooth muscles.

Physiology of nervous system, cardiovascular system, lymphatic systems, respiratory system, digestive system, endocrine system, urogenital system, reproduction, aviation, space and deep sea diving physiology:

Biochemical characteristics of living matter, vitamin and mineral metabolism

Enzymes, carbohydrates, lipids, amino acids, proteins, hormones : Function and metabolisms.

Metabolic homeostasis : Metabolic role of organs, homeostasis of carbohydrates, lipids and nitrogen, regulation of appetite, energy expenditure and body weight, biochemical mediators of obesity, hypothalamic integration of hormonal signals

Nucleic acids overview of the structure of RNA and DNA including nucleotides,

Techniques in biochemistry : Principle and applications of gel, ion exchange, thin layer and gas chromatography, HPLC, Electrophoresis, Homogenization, Differential Centrifugation PCR,

Ligation and transformation, Western blotting, Enzyme Kinetics, ELISA

Genetics : Introduction to genetics , principles and its application

3. Microbiology , Pathology & Pharmacology

Microbiology

Basic concepts and tools in microbiology: Spontaneous generation biogenesis, germ theory of diseases, Koch's postulates, the microscopy (Light and electron) preparation & staining of specimens, bacterial morphology, taxonomy, nutrition, growth and control, bacterial size, shape, arrangement. Structures- structure external to cell wall, structure and chemical composition of cell wall, bacteriological media, diseases caused by aerobic bacteria, anaerobic bacteria, viruses.

Immunology : complement systems, immune response and hypersensitivity.

Pathology

Classification of lesions, inflammation, cell Injury, death & adaptation, tissue & cell repair.

Haemodynamic disorders, blood & lymph disorders and neoplasm.

Systemic pathology affecting cardiovascular system; respiratory system, nervous system, endocrine system, alimentary system, urinary system.

Pharmacology

General pharmacology : Pharmacokinetics, routes of administration, dosage forms and new drug delivery systems, mechanism of drug action, bioassay, drug toxicity, therapeutic index, factors modifying drug response, pharmacogenetics and teratogenicity, drug interaction, clinical examination of drugs, rational drug use essential drugs and adverse drug reactions.

Drugs acting on autonomic nervous system, central nervous system, respiratory system, cardiovascular system, renal system, gastro-intestinal tract. Nonsteroidal anti inflammatory drugs, antibiotics and chemotherapeutic agents and other drugs used in clinical management of various human diseases.

4. Biomechanics, kinesiology, prosthetics and orthotics

Biomechanics, kinesiology

General biomechanics: kinematics, kinetics, planes, axis of human movements

Muscle, tendon, bone, ligaments and other body component biomechanics

Biomechanics of different joints of human body: Spine, upper limb, lower limb, thorax.

Biomechanics of gait and posture

Prosthetics and orthotics

Prescription of orthotics: upper limb orthosis, lower limb orthosis and spinal orthotics

Prescription of prosthetics: upper limb orthosis, lower limb orthosis and spinal prosthetics

Foot wear modification, adaptive devices in rehabilitation and walking aids.

5. Exercise Therapy

Mechanical basis of movement, skeletal basis of movement, musculoskeletal basis of movement and neuro physiological basis of movement

Motor learning and motor control

Fundamental and derived positions, classification of exercise: active movement, passive movements.

Flexibility, relaxation, peripheral joint mobilization and soft tissue mobilization.

Biomechanical modalities

Goniometry

Manual strength and length testing methods : manual and mechanical

Muscle re-education, PNF, mat activities

Exercise Testing and Prescription

Therapeutic Gymnasium

Strength and endurance: assessment and training
Balance and coordination: assessment and training
Gait and posture : Pathology and rehabilitation
ADL, functional training.
Traction
Suspension Therapy
Hydrotherapy

6. Electrotherapy

Electrical activities in muscles and nerves, application of energy to the human body,
Properties of electricity : AC & DC
Electric components : Transformers, rheostat, semiconductors, conductors, capacitor etc.
Electromagnetism, electro magnetic radiations
Therapeutic physical modalities: Guidelines of application of electrotherapy, cryotherapy
,LASER, infrared therapy, ultraviolet therapy, Faradic, Galvanic current, TENS,IFT,SWD,
MWD, long wave diathermy, ultrasound therapy, combination therapy, shockwave therapy.

7. Physiotherapy in Orthopedics and rheumatology

Medical and surgical management in orthopedic and rheumatological conditions.
Physiotherapy orthopedic assessment
Role of Diagnostic tools
General physiotherapy approach towards trauma
Classification of fractures and dislocation.
Principals of treatment and complication management of fractures ,dislocations and soft tissue injuries
General Pre and post operative assessment and management of common surgeries like:
Arthrodesis and Arthroplasty, Osteotomy, Spinal stabilizations, Limb lengthening and reattachments, Tendon surgeries, Muscle surgeries, Nerve surgeries, amputation
Developmental disorders of bone; Signs, symptoms, assessment and physiotherapeutic management of the following congenital deformities: CTEV, CDH, Foot arch deformities, Limb deficiency, Arthrogryposis multiplex congenital, Spinal bifida, Sprengel's shoulder, Torticollis, Osteogenesis imperfect, Spinal deformities, Coxavara
Signs, symptoms, common sites, assessment and physiotherapeutic management of the following
Bone and joint infections; Osteomyelitis, Tuberculosis, Leprosy, Septic arthritics.
Signs, symptoms, common sites, assessment and physiotherapeutic management of the following rheumatological conditions: Osteoarthritis, Rheumatoid arthritis, Fibromyalgia, Gout, Psoriatic arthritis, Pseudo gout, Miscellaneous arthritis conditions
Review of the condition, assessment, management and treatment goals and plans for the following conditions:
Shoulder: Rotator cuff injury, Periarthritis, Adhesive capsulitis, Bursitis etc
Elbow; Tennis and Golfers elbow, Recurrent ulnar nerve slipping, Pulled elbow etc
Wrist and hand: Ganglion, Dequervians, Trigger thumb and finger, CTS, Dupuytren's contracture, Flexor and extensor tendon injuries, RA hand, Burned hand, Mallet finger
Hip : Slipped epiphysis, AVN, Hip OA
Knee : Deformities, Osgood schlatter's, Loose bodies, Anterior knee pain, Chondromalacia

patella, Bursitis OA Knee

Foot and Ankle: Anterior foot pain, Heel pain , Tarsal tunnel syndrome, Trophic ulcers Spine: Thoracic outlet syndrome , Torticollis, PIVD, Spondylolesthesis, Strain, Lumbar canal stenosis, Spondylitis, Ankylosing Spondylitis

8. Physiotherapy in general medicine and surgical conditions

Medical and surgical management in conditions other than in orthopedics, neurology, cardiopulmonary disorders.

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following condition

Transplantation: Liver, Kidney

Nutritional and metabolic disorders; Balanced diet, Protein caloric malnutrition, Diabetic mellitus, Obesity, Osteoporosis, Other nutritional disorders

Physiotherapeutic techniques: Postural drainage, Manual techniques (percussion, vibration, shaking), Breathing exercises, Forced expiratory techniques : coughing, huffing, supported coughing

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

Dermatology: Assessment of skin condition, Psoriasis, Leprosy, Syphilis, Acne, Leucoderma, Alopecia

Oncology; Classification and characteristics of common tumors- their complications and management, Mastectomy, AIDS

Edema: Definition, types, factors controlling tissue fluid circulation, cause of edema, physiotherapy assessment and management of edema,

Inflammation: Signs of inflammation, stages and their physiotherapy management

Gangrene: Types and their physiotherapy management

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

Paediatrics : Brief overview of General growth pattern, Paediatric assessment and its normal parameters, Birth trauma, Learning disorders (brief), Obesity, Diabetes, Bleeding disorders, Pre term babies with high risk infants, Congenital and acquired structural deformities

Pre and post physiotherapy management and complications and their management of the following Surgeries.

General surgery: General scheme of case taking, Incision and its types, Anaesthesia and its complication (brief overview), Hernia – its types and managements, Abdominal surgeries, Nephrectomy, Colostomy, Cystectomy., Colectomy, Prostatectomy

Obstetrics and Gynaecology: Clinical anatomy of Pelvic floor, Prenatal and postnatal programs, Relaxation, Postural training, Pelvic floor stretching and strengthening exercises, Physiotherapy during labor, Post natal exercise programme after normal labor/labor with invasive procedures, Uro-genital dysfunction, P.T. Management-Menopause De conditioning, PT. management-common gynecological surgeries, Role of PT clinical reasoning for application of electro therapeutic modalities in obstetric and gynaecological conditions.

Review of pathological changes and principles of pre and post operative management by physiotherapy of the following conditions.

Wounds: Normal wound healing, Abnormal wound healing and chronic wound, Examination, Evaluation, Diagnosis, Prognosis and Physiotherapy Intervention, Pressure ulcers

Burns and Plastic Surgery: Skin anatomy and burn wound pathology, Classification of burn injury, Complication of burn injury, Burn wound healing, Medical and surgical management of burn, Physiotherapy management, Skin graft and flaps

9. Physiotherapy in sports injuries

Medical and surgical management in sports injuries.

Sports Medicine Team Members

Nutritional Considerations- Significance of prevent meal and eating disorders

Protective Sports Equipment-Relevance of protective equipments in sports

Environmental Factors & Sports Performance-Climatic variations and sports performance

Body Composition & Sports Performance: Concept and significance of various body composition techniques in sports

Special Considerations- Female Athlete, Strength and endurance considerations for adolescent non athletic population

Preventive Aspects of Sports Injury :Different causes for sports injury, principles of training, methods and exercise prescription

Exercise consideration Special Population : Hypertension, Diabetes Mellitus and other life style disorderBasic Concept of periodization in sports

Preparticipation Athlete Evaluation : Therapeutic and preventive interventions- Taping,

Sports Massage Bandaging and wrapping techniques, Cryotherapy etc.

Emergency Care & On field Injury Assessment and management

Psychological Aspects of Sports Injury

Sports Traumatology and Management : Spine Injury Patterns, Assessment and Management of common spinal injuries in sports, Shoulder Joint Complex-Rotator Cuff Injuries in throwing athletes, Fractures of GI Joint Complex- Conservative, Surgical Management and

Return to sports criteria for different sports, Design of prevention models etc., Elbow Joint, Wrist Joint and Hand Complex- Overuse Injuries, Biomechanical Errors, Conservative, Surgical Management and Return to sports criteria

Hip, Pelvis and thigh, Knee Joint Complex- Ligamentous and meniscal injury patterns in different sports, Conservative, Surgical Management and Return to sports criteria for different sports injuries

Foot and Ankle joint Complex: Conservative, Surgical Management and Return to sports criteria for different sports

Exercise and sports physiology: Cardio respiratory function and performance, Cardiovascular control during exercise, Respiratory regulation during exercise, Cardio respiratory adaptation to training

Physical fitness: Concept of health and physical fitness, Assessment of coordination, speed, accuracy of performance, Ergogenic aids and performance

10. Physiotherapy in cardiopulmonary disorders

Medical and surgical management in CARDIOPULMONARY CONDITIONS

Physiotherapy Techniques: Breathing exercises Inspiratory muscle training PNF respiration

Humidification and aerosol therapy

Ventilators

Airway clearance devices: Flutter, Thera PEP, Acapella, High frequency chest wall oscillation

(HFCWO), Intrapulmonary percussive ventilation (IPV), Insufflation/exsufflation- assisted cough, IPPB

Airway clearance techniques: Postural Drainage & Manual Techniques, ACBT, AD, Manual and Ventilation, Hyperinflation, Suctioning

Selection of airway clearance technique

Positioning and Mobilization

Cardiovascular Physiotherapy

Assessment of cardiovascular system

Investigative procedures

Cardiac rehabilitation and secondary prevention

Etiopathogenesis, clinical and physiotherapy management of the following conditions: Congenital heart diseases: ASD, VSD, PDA, Fallot's tetralogy, Ischemic heart diseases, Cardiac failure, Rheumatic fever, Hypertension,

Pulmonary Physiotherapy: Assessment of pulmonary system, Pulmonary rehabilitation,

Investigative procedures

Etiopathogenesis, clinical and physiotherapy management of the following conditions: Obstructive pulmonary diseases, Infections, Neoplasm, Interstitial pulmonary diseases, Diseases of nasopharynx, larynx and trachea, Diseases of pleura, diaphragm and chest wall, Chest deformity

Physiotherapy In Cardiovascular And Pulmonary Surgeries: Introduction, Types of incision, pre and post operative assessment, management and complications of cardiothoracic surgery

Cardiac surgery: Indication, contraindications, incision, pre and post operative management and complications of the following: Valvotomy and valve replacement, Open heart surgery/ cardiac bypass surgery, Surgery on pericardium, Operations of congenital disorders, Heart transplantation, Pacemaker implantation, Coronary angioplasty, Balloon angioplasty and vascular surgery., Surgery of arteries and veins.

Thoracic surgery: Pre and post operative management and complications of: Rib fracture, Flail chest, Stove in chest, Surgery of the pleura, Pneumothorax, Haemothorax, Lung contusion and laceration, Injuries to vessels and bronchus., Lung transplantation, Intercostals catheters (chest tubes), Lobectomy, Pneumonectomy, segmentectomy, Thoracoplasty, Lung Volume Reduction surgery, VATS

Physiotherapy in intensive care Unit: Assessment of critically ill patient in the ICU, Monitoring and interpreting medical investigations, Mechanical ventilation: implications for physiotherapy, Respiratory failure. Physiotherapeutic technique used in ICU, Cardiopulmonary exercise testing and prescription

11. Physiotherapy in neurological disorders

Medical and surgical management in neurological and psychiatric disorders

Neurological Assessment and Neurophysiotherapy techniques : Assessment of CNS in adults and Children, Assessment of PNS & ANS

Techniques in Neurological Physiotherapy : NDT, Rood's, PNF, Motor relearning programme, 5. Biofeedback, FES, Brunstrom approach

Aetiopathogenesis, Clinical manifestations and physiotherapy management of

Neuromuscular Diseases : Motor-neuron diseases, Disorders of peripheral nerves, Disorders of cranial nerves, Myopathies.

Infections Disorders of Nervous system: Encephalitis, Meningitis, Poliomyelitis
 Demyelinating disorders of CNS.: Multiple Sclerosis
 Neoplasm of Nervous system: Brain Tumor & Spinal Tumors.
 Congenital and Developmental anomalies of nervous system : Neural tube defects and hydrocephalus, Congenital Myopathies
 Metabolic, toxic and disorders of nervous system: Nutritional deficiencies, Toxin and drug induced nervous system damage
 Cerebellar Disorders.
 Movement disorders
 Cerebrovascular accident.
 Spinal cord Injury.
 Traumatic brain injury.
 Cerebral Palsy.
 Vestibular disorders.
 Disorders of autonomic nervous system.
 ICU management of neurologically impaired.
 Pre and post-operative physiotherapy management of: Nerve repair. Tumour Surgery of brain and spinal cord.
 Nutritional deficiency affecting nervous system, toxins and Drug induced Nervous system Pathology, physiotherapy management of psychiatric patients.

12. Physiotherapy in community based rehabilitation

Community Medicine : Introduction to community medicine, Concepts of Health & Illness
 Healthcare system, Screening for a health conditions
 Preventive medicine and Public Health practice : Communicable diseases, Maternal and child health (MCH), Geriatrics, disaster Management Concept & philosophy of public health Public health law and concept of social security, International health and role of international agencies.
 Health Education : Role of health education in rehabilitation services
 Community Rehabilitation : Disability and Rehabilitation, Multidisciplinary approach, Rehabilitation approaches, Socio-legal aspects Rehabilitation, National and international agencies in rehabilitation, Barriers in rehabilitation, Community Based Rehabilitation, Vocational Rehabilitation
 Rehabilitation in special cases: Visual, Speech, Communication & Hearing impairment, Physically challenged. Mentally challenged, Psychiatry & De-addiction Syndromes, Behaviour and Learning problems. Role of Telerehabilitation & Assistive technology
 Occupational Health & Ergonomics : Occupational hazards. Occupational Stress & Work management, Returning the worker to productivity, Occupational Ergonomics

13. Research Methodology, Biostatistics, Ethics

Research methodology, biostatistics and ethics
 Importance of research in physiotherapy, Research ethics, Clinical issues in research, elements of informed consent, Structure of research proposal , Research methodology, Research problems, questions and hypotheses, Review of literature, Measurement; Principles of measurement reliability and validity, Experimental sampling and design, Descriptive research

Collection of Data , Sampling methods , Variable: Discrete and continuous.
 Presentation of Data: Classification and tabulation.
 Diagrams and graphs: Bar, pie, Histogram, line graph
 Concept of statistical population and sample characteristics of frequency distribution.
 Measures of Central tendency: Mean Mean, Median, Mode & Weighted Arithmetic Mean
 Measures of Dispersion: Range, Quartile deviation, Mean deviation & Standard deviation
 Correlation and Regression.
 Test of significance: T-test, chi square test, ANOVA
 Ethical principles applied to moral issues in health care
 Rules of professional conduct and scope of practice
 Relationship with patient
 Relationship with the profession
 Confidentiality and responsibility
 Professional and government licensing accreditation and education standards.
 Laws and legal concepts: Legal aspects related to rehabilitation, Medico legal cases, Workman compensation, insurance facilities other financial benefits available for the disability, Law protection from malpractice claim, Consumer protection act. Liability and documentation, Constitution and functions of the Indian association of Physiotherapists, Functioning of the World Confederation of Physical therapy (W.C.P.T and its various branches special interest groups, Role of WHO and WCPT, safety precautions in Physiotherapy.

14. Psychology, Sociology, Environmental Sciences, Business Administration

Psychology
 Nature, branches, methods in Psychology
 Learning: Nature, Theories- classical and operant conditioning, insight learning.
 Emotions: Nature and relationship with autonomic nervous systems, Theories of emotions.
 Memory: Types, Forgetting, Causes, Attention and perception,
 Stress: Meanings, Physiological response to stress, Coping strategies.
 Intelligence: Nature, factor theories, process theory
 Altered state of consciousness: Dream, Hypnosis, Sleep
 Difference between normal and abnormal behaviour,
 Anxiety Disorders: Phobias, Panic disorder, generalized anxiety disorder, obsessive- compulsive Disorder
 Somatoform Disorders: Conversion disorder, Somatomization disorder
 Dissociative Disorders: Depersonalization disorder, dissociative amnesia, dissociative identity disorder
 Mood Disorders: Unipolar disorder, Bipolar disorder
 Schizophrenias and Delusional Disorders
 Disorders of Childhood: Attention deficit / hyperactivity disorders, learning disabilities, mental retardation.
 Substance Abuse: Etiology of substance abuse and dependence, alcohol abuse, nicotine and Cigarette
 Old age and Brain Disorders: Delirium dementia

Psychologically based therapies: Psychodynamic, behavior therapy, cognitive behavior , emotion therapy, humanistic-existential therapy.

Sociology

Definition, sociology as a science

Basic concepts and social structure

Institutions and Agencies

Society, Culture and Health :Defining the concepts and approaches to health, health Care System

Major determinants of health, home treatment, beliefs and practices affecting therapy

Health and Disability: Disability- a social perspective, gender and disability, access to public health care and livelihood

Development and Social problems :Concepts and models of social developments,social problems of development

Environmental Sciences

Environmental Pollution:Definition, causes, effect and control measures of pollution air, water, soil, marine, oil, thermal, radiation, heavy metal, gases particulate matter, pesticide, solid waste (urban and rural), solvents, drugs and noise.

Absorption, Distribution, Elimination and Organ Toxicology :Membrane coefficient, Mechanism of absorption, Rate of penetration, Routes of absorption of toxicants in human (oral, pulmonary, dermal) Air-water, Octonal-water, Lipid-water, Particle-water partitioning, Renal, Hepatic, Respiratory. Alimentary, Dermal, Cellular, Sex linked elimination of toxicants, Target organ toxicity (Hepato, Neuro, Nephro, Reproductive)

Bioaccumulation, biomagnification, biodegradative & non biodegradative substances, Acute and chronic toxicity, Dose- response relationship, LD 50 & LC 50,Environmental, Forensic, Food, Clinical toxicology, Food additives, Indoor and outdoor pollutants, Occupational hazard, Biological warfare and chemical warfare, Infectious and medical waste, Drugs of abuse, pollutants in cosmetics, Additive, synergistic, Antagonistic effects.

Business Administration

General Administration: Planning and organization, planning cycle, principles of organization charts, resources and quality management, planning change

Financial issue including budget and income generation

Hospital management: Hospital organization, Staffing, Information communication and coordination with physiotherapy, Services of hospital, Cost of service, Monitoring, Evaluation

Self Management: Preparing for first job, Time management, Career development, Sale of goods and services, Profession of services and advertising

Administration of the Department:

Describe methods of administration in a Physiotherapy department

Records their purpose e.g. attendance, statistics, inventory stock

Maintenance of records e.g. Methods of community and institutional based department (CBR and IBR)

Referrals – purposes and types of referral

Store keeping materials, inventory records, purchase ordering petty cash accounting

General maintenance of equipment, furniture, building costing, of splints/aids, equipment/articles, made in physiotherapy, types of correspondence , methods of filing, methods for care of equipment and materials,

budgeting including items for an annual budget

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