

SCHOOL OF MEDICAL AND ALLIED HEALTH SCIENCES

DEPARTMENT OF PHYSIOTHERAPY

SYLLABUS

PH.D. ENTRANCE EXAMINATION

SUBJECT: PHYSIOTHERAPY

Unit – I: Electrotherapy (LMHF & Equipment care)

Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy, Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus, Electrical stimulation for the muscles supplied by the peripheral nerves, Plotting of SD curve with chronaxie and rheobase and demonstrate FG test, Application of Ultrasound for different regions-various methods of application, Demonstrate treatment techniques using SWD, IRR and Microwave diathermy and technique of UVR exposure for various conditions – calculation of test dose, Demonstrate treatment method using IFT for various regions, Calculation of dosage and technique of application of LASER, Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy, whirl pool bath and Faradism under Pressure for UL and LL, Equipment care - a) Checking of equipment's b) Arrangement of exercise therapy and electro therapy equipment. c) Calibration of equipment d) Purchase, billing, document of equipment. e) Safety handling of equipment's. f) Research lab equipment maintenance. g) Stock register, movement register maintenance, demonstrate application of TENS: Types of TENS, Conventional TENS, and Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placements of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications, Demonstrate application of Ultrasound: Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continuous & Pulsed mode, Intensity, US Fields.

Unit – II: Exercise Therapy

Specific exercise regimens a. Isotonic: de Lormes, Oxford, MacQueen, Circuit weight training b. Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle c. Isometrics Isokinetic regimens, Proprioceptive Neuromuscular Facilitation, Techniques of facilitation, Mobility: Contract relax, Hold relax, Rhythmic initiation, Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization g. Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal. Aerobic Exercise a. Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

Unit – III: General Medicine, Paediatrics & Psychology

Infection: Effects of Infection on the body – Pathology – source and spread of infection – Vaccinations – generalized infections – Rashes and infection – food poisoning and gastroenteritis– sexually transmitted diseases – HIV infections and Aids. Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides –

Envenomation. Food and Nutrition: Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications

Pediatrics: Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy causes, complications, clinical manifestations, treatment; Spina Bifida – management and treatment, Epilepsies – types, diagnosis and treatment; Recognizing developmental delay, common causes of delay; Orthopedic and Neuromuscular disorders in childhood, clinical features and management; Sensory disorders – problems resulting from loss of vision and hearing; Learning and behavioral problems – Hyperactivity, Autism, Challenging behaviors, Educational delay, The Clumsy Child.

Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of Psychiatric treatment, Psychiatric illness and physiotherapy, Brief description of Etiopathogenesis, manifestations, and management of psychiatric illnesses -. Anxiety neurosis, Depression, Obsessive-compulsive neurosis, Psychosis, Maniac-depressive psychosis, post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress – Illness.

Unit – IV: Exercise Physiology

ENERGY PRODUCTION, EXPENDITURE, AND TRANSFER

- Energy transfer in cells during exercise.
- Oxygen metabolism and transfer during metabolism.
- Oxygen transport in blood
- Oxygen deficit, Oxygen debt.
- Oxygen measurement, Oxygen during exercise, Oxygen during recovery.
- Energy release from carbohydrate, lipids and proteins.
- BMR – during rest, at activity.
- Energy expenditure during activity.
- Short Term and Long term energy systems.

EXERCISE PERFORMANCE

- Lung function and its role in exercise performance
- Regulation of ventilation & blood pressure during exercise.
- Cardiovascular adjustment during exercise.
- Muscle fiber, types and its role in exercise performance.
- Ventilation during steady and non-steady rate exercise.
- Energy cost and breaking.
- Blood pressure (BP) response to exercise.
- Cardiac output during exercise in – trained / untrained.
- Cardio vascular drift.

Unit – V: Orthopaedics

Bicipital tendinitis, tennis elbow, golfer's elbow, carpal tunnel syndrome, ape thumb deformity, trigger finger. Osteoarthritis of shoulder, swan neck deformity, claw hand, wrist drop. Upper cross syndrome, cervical spondylosis, upper back pain. Scapula dyskinesia, winging of scapula, shoulder dislocation, elbow dislocation, Muscle contusion, muscle cramps, muscle strain/stress, fasciitis. Tendinopathy, pectorals major tendinopathy, thoraco lumbar spine dysfunction. vascular headache, impingement

syndrome, referred pain. Fractures of Upper Limb- Humerus, Scapula, Radius & Ulna, Carpals, Metacarpals & Phalanges Fractures of Lower Limb- Pelvis, Femur, Tibia, Fibula, Tarsals, Metatarsals & Phalanges Soft tissue injuries of Upper Limb Soft tissue injuries of Lower Limb. Arthritis & Rheumatic Diseases Rheumatoid arthritis, Polymyalgia rheumatica, Gout, Osteoarthritis, Ankylosing spondylitis, Adhesive capsulitis, Infections of Musculoskeletal system Bacterial infections of bones & joints Tubercular infections of bones & joints. Disc prolapse, Cord compression, Spondylosis etc. Scoliosis, Kyphosis, lordosis Fractures of the spine

Congenital malformations:

Brief descriptions of following congenital conditions along with the outline of treatment:

- Congenital Hip Dysplasia
- Congenital Talipes Equinovarus/Calcaneovalgus
- Congenital Torticollis
- Coxa vara
- Coxa valga
- Developmental diseases of skeleton

Unit – VI: Sports Medicine

Rotator cuff, Bicipital tendinitis, Tennis elbow, Carpal tunnel syndrome, Ape thumb deformity, Trigger finger, Frozen shoulder, Swan neck deformity, Ligamentous injury Cervical spondylosis, Whiplash injury, Scapula dyskinesia, winging of scapula Shoulder dislocation, Elbow dislocation, Upper back pain, Wrist drop, Muscle strain/stress Impingements syndromes, Referred Pain, Muscles contusion. Muscles cramps during sports condition. Fascitis, Tendinopathy, Pectoralis major tendinopathy, Thoracic/lumbar spine dysfunction, Overload, Vascular Headache. Soccer, swimming, Weight lifting, Tennis, Cricket, Hockey, Brest injuries.

Unit –VII: Cardiopulmonary

Section I: Cardiac Disorders

Cardiac Catheterization, Radionuclide scanning, stress testing, ABG, Labs etc.) and medical management of disorders of the cardiac system.

Assessment of symptoms of heart disease

- Disorder of cardiac rate, Rhythm and condition, Cardiac Arrest, Cardiac failure, Shock
- Rheumatic fever
- Congenital heart disease
- Disease of the heart valve
- Infective Endocarditis
- Ischemic heart disease
- Hypertension & Orthostatic hypotension
- Pericarditis

Section II Pulmonology Disorders

Epidemiology, pathomechanics, clinical presentation, relevant diagnostic tests (PFT, Labs etc.) and medical management of disorders of the pulmonary system.

- Obstructive pulmonary disease
- Infection of the Respiratory system

- Interstitial and infiltrative pulmonary disorders
- Pulmonary disorders due to exposure to Organic and inorganic pollutants.
- Pulmonary disorders due to systemic inflammatory disease
- Pulmonary vascular disease
- Disease of pleura
- Respiratory failure
- Supplemental Oxygen and Oxygen delivery devices in Chronic Respiratory Disease

Unit –VIII: Neurology

Disorders of cerebral circulation –

- Epidemiology of the Stroke
- Causes, Types, Pathophysiology
- Clinical Features and Investigation
- Treatment of Different Type of Stroke
- Recovery and Rehabilitation
- Stroke Prevention

Disorders of Higher Cerebral Cortical Function and its rehabilitation
Disorders of Different Lobes

- Frontal lobes
- Temporal lobes
- Parietal lobes
- Occipital lobes
- Sub Cortical lesions

Disorders of cranial nerves

- Testing of Cranial Nerves
- Disorders of Cranial Nerves, Cranial Neuropathy
- Rehabilitation Protocol