(Musculo-skeletal Dysfunctions of the Upper Quadrant)

(Upper Quadrant includes occiput, cervical spine, thoracic spine, shoulder girdle and upper extremities)

1. Anatomical, Physiological and Biomechanical basis for assessment of movement dysfunctions of the upper quadrant

2. Pathophysiologival and Pathomechanical basis for management of movement dysfunctions of the upper quadrant

3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of the upper quadrant

4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the upper quadrant

5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management

6. Advances in the field of Manual Therapy (joint manipulation, MFR, MET, Neural mobilization – cyriax, maitland, butler, mckenzie, kaltenborn, mulligan)

7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports


9. Ergonomics in Musculo-skeletal dysfunction of the upper quadrant

10. Assistive technology used for stability and mobility to enhance function.

11. Evidence based practice to formulate effective assessment and treatment program

12. Evaluation of disability


14. Assessment, clinical reasoning and management of Integumentary impairments due to musculoskeletal dysfunction
15. Pharmacotherapeutics in musculoskeletal conditions and its relevance in physiotherapy

16. Clinical decisions for lower quadrant function in presence of upper quadrant dysfunction.

(Musculo-skeletal Dysfunctions of the Lower Quadrant)
(Lower Quadrant includes lumbar spine, sacrum, pelvis and lower extremities)

1. Anatomical, Physiological and biomechanical basis for assessment of movement dysfunctions of the lower quadrant

2. Pathophysiological and Pathomechanical basis for management of movement dysfunctions of the lower quadrant

3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of the lower quadrant

4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the lower quadrant

5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management

6. Advances in the field of Manual Therapy

7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports


9. Ergonomics in Musculo-skeletal dysfunction of the lower quadrant

10. Assistive technology used for stability and mobility to enhance function.

11. Assistive technology used for stability and mobility to enhance function.

12. Evidence based practice to formulate effective assessment and treatment program

13. Evaluation of disability


15. Assessment and management of Integumentary impairments due to musculoskeletal dysfunction.

16. Orthopaedic implants, design, material. External aids, appliances, adaptive self help devices
17. Clinical decisions for upper quadrant function in presence of lower quadrant dysfunction

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Syllabus For: Neuro Physiotherapy -Paper II

This paper will focus on advances in theory and practices in adult neurological conditions

1. Neurodevelopmental and neurophysiological approaches in Adult neurological condition.
   Neuro-anatomy and neurophysiology-
   • Development of nervous system, Peripheral nerves and ganglia, receptors and effectors, dermatomes and muscular activity, CNS an overview, spinal cord, brainstem.
   • Blood supply of the brain
   • Meninges, cerebrospinal fluid and Fluid compartments and fluid balance in the CNS
   • Autonomic nervous system
   • Reflex maturation- Neurophysiologic basis
   • Normal sequential physiological changes throughout the developmental age
   • Physiology of pain: Models of pain, Basic molecular biology, neurobiology, stress biology and pain, Peripheral and central pain mechanisms, theory of modulation of pain.

2. Basic and Advance skills in assessment of adult neuro-pathological, neuropsychological and neurosurgical conditions

3. Various outcome measures and assessment methods used in adult neurological condition

4. Brain diseases and disorders- Definitions, Causes, Clinical features, Pathophysiology & General Investigation

5. Physiotherapy in cranial nerve disorders:- Bell’s Palsy, Trigeminal Neuralgia, Facial nerve Palsy, Glossopharyngeal Nerve Injury, Vestibular system dysfunction and other Cranial Nerve Disorders

6. Spinal cord injury/diseases (Traumatic / non Traumatic- Infective, Degenerative & Demyelinating, Tumor

7. Peripheral nerve injury(Traumatic/non Traumatic)

8. Muscle disorders- Myotonic disorders, progressing muscular dystrophy, Duchenne muscular dystrophy, Becker muscular dystrophy, Limb-girdle muscular dystrophy, Spinal muscular atrophy,

9. Neuromuscular disorders-Myasthenia gravis, Lambart-Eaton syndrome,
10. **Autonomic nervous system disorders**- Acute Autonomic Paralysis, Primary Autonomic Failure, Peripheral Neuropathy with Secondary Orthostatic Hypotension, Autonomic Failure, Horner and Stellate Ganglion Syndromes, Sympathetic and parasympathetic paralysis in tetraplegia and paraplegia

11. **Psychosomatic disorders**:- Anxiety disorder, Mood disorder, Psychotic, Personality, Sleeping, Eating Disorder, Drug addiction, Identity disorder, Memory and cognitive disorder

12. Advanced Neuro-therapeutic skills for management

13. Evaluation, Assessment and Acute/long term goals for Physiotherapy management in neurological conditions

14. Role of Physiotherapy in progressive neurological conditions, management of terminally ill patient.

15. Clinical decision making and evidence based practice to formulate effective assessment and treatment program

16. Pharmacotherapeutics in neurological conditions and its relevance in physiotherapy

17. **Recent Advances/ techniques in Physiotherapy**

18. **Recent Advances in Neuro-surgeries and role of physiotherapy in neurological conditions**

19. **Orthoses used in neurological conditions** :- Material used, Assessment, Prescription of Splints and Braces, Orthosis for Upper limb and lower limb

20. ICU management of a neurologically ill patient.

21. **Neuro- Rehabilitation**:- Introduction, team, Equipments, phases, exercise testing, exercise prescription and Exercise interventions in neurological conditions.
1. Structural, functional and Biomechanical basis for assessment and management of dysfunctions of the respiratory system and thorax throughout the life span.

Assessment and Physiotherapy Management in Obstructive diseases: Chronic obstructive pulmonary disease, chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic fibrosis.

Assessment and Physiotherapy Management in Restrictive diseases: Pleural disorders, Pneumonia, lung abscess, Empyema, Pulmonary tuberculosis.

Assessment, Acute and long term Physiotherapy management in acute chest trauma, pulmonary fibrosis, atelectasis, interstitial lung disease, Gullian Barre syndrome, pulmonary embolism, acute respiratory distress syndrome, ventilator associated Pneumonia, respiratory failure, organophosphorous poisoning.

2. Clinical reasoning in physiotherapeutic evaluation & management of all neonatal, pediatric, adult and geriatric dysfunctions of the respiratory system and thorax in acute care and in rehabilitation

3. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of thorax and respiratory system.

4. Interpretation and application of Investigations related to Respiratory and thoracic dysfunction and its relevance to physiotherapy

5. Evidence based practice in management of Respiratory & Thoracic impairments & dysfunction.

6. Pulmonary rehabilitation: Introduction, team, equipments, phases, exercise interventions, exercise testing and exercise prescription in respiratory conditions

7. Ergonomics and energy conservation in Respiratory dysfunction and use of assistive devices to enhance function and performance.

8. Pathology of pain in medical and Post-surgical conditions related to thoracorespiratory dysfunction and advances in its evaluation and management

9. Pulmonary Surgery: Classification of Pulmonary surgeries, Complications and Role of Physiotherapy in Pulmonary Surgeries.

10. Surgical investigations: Microbiological investigations, Pathological investigations, Radiological investigations, recent advances in pulmonary surgical investigations
11. Clinical decision making and evidence based practice in physiotherapeutic evaluation & management of all medical, surgical and traumatic disorders across the life span in a critical care (ICU) setting

12. Respiratory Physiotherapy in intensive Care Unit: Mechanical Ventilation, initiation of Mechanical ventilation, modes of mechanical ventilation, complications during mechanical ventilation, monitoring during mechanical ventilation, weaning criteria, post-extubation care, lung recruitment maneuvers, non invasive mechanical ventilation, oxygen therapy, aerosol therapy and nebulization, bronchial hygiene techniques, humidification, suctioning methods.

13. Principles of health and performance, Risk stratification, Prevention and health promotion

14. Pharmacotherapeutics in respiratory condition and its relevance with physiotherapy

15. Structural and functional and Biomechanical basis for assessment and management of dysfunctions of the circulatory system including peripheral vessels and mediastinum throughout the life span.

16. Clinical decision making skills in physiotherapeutic evaluation & management of all neonatal, pediatric, adult and geriatric dysfunctions of the cardiovascular including peripheral vasculature system and mediastinum in acute care and rehabilitation

17. Physiotherapy and Cardiac Rehabilitation in Cardiac Disorders: Myocardial Infarction, Congestive Cardiac failure, Ischemic heart disease, Physiotherapy after cardiac surgery, Physiotherapy after angioplasty.

18. Exercise testing and prescription in clinical population other than cardiac disease: Exercise testing and prescription in Hypertension, Diabetes mellitus, Cancer, Dyslipidemia, Metabolic syndrome.

19. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of cardiovascular and peripheral vascular system.

20. Evidence based practice in assessment and management of cardiovascular and peripheral vascular dysfunction and failure

21. Ergonomics and energy conservation in cardiovascular dysfunction and use of assistive devices to enhance function and performance.

22. Classification of surgeries, Complications of surgeries and role of Physiotherapy in Cardiac Surgeries

24. Management of the critically ill: knowledge of Airways - types & management of Mechanical ventilator, use of Oxygen therapy; Physiotherapeutic Interventions in intensive care, weaning and ICU monitoring

25. Physiotherapy in Peripheral vascular Disorders: Peripheral arterial diseases, venous disorders, lymphatic diseases.

26. Life style modification for Cardiac Patients: Teaching patient to monitor heart rate, for unsupervised exercise, incorporation of physical activity in daily schedule, methods to motivate for regular physical activity.

27. Interpretation and application of Investigations related to Respiratory, cardiac and thoracic dysfunction and its relevance to physiotherapy.

28. Pharmacotherapeutics in cardiac condition and its relevance with physiotherapy.

29. Clinical decision-making skills in physiotherapeutic evaluation & management of Lifestyle disorders.

30. Cardio-Respiratory fitness testing and training in sports and diseases


32. Clinical reasoning, assessment and management of Integumentary and other system impairments due to cardiovascular and respiratory diseases.
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Syllabus For: Pediatric Physiotherapy -Paper II

1. **Physiotherapy in Obstructive diseases:** Emphysema, bronchial Asthma, Bronchiecctasis, Cystic fibrosis, Inhaled foreign tracheal esophageal fistula.

2. **Physiotherapy in Restrictive diseases :** Pneumonia, Lung abscess, Empyema, Pulmonary Tuberculosis, acute respiratory distress syndrome.

3. **Respiratory Physiotherapy In NICU and PICU-** Meconium aspiration syndrome, respiratory distress syndrome, Pulmonary fibrosis, Atelectasis, Ventilator Associated Pneumonia , Respiratory failure.

4. **Physiotherapy in cardiac conditions -** Acyanotic and cyanotic heart diseases, Rheumatic heart diseases, cardiac arrhythmia and pericarditis, cardiac failure.

5. **Pulmonary and cardiac surgeries-** Pneumonectomy, Lobectomy, Pleural tapping, Intercostal drainage, Heart transplantation, Pericardiocentesis, valve replacement surgery, congenital heart surgeries.

6. **Congenital disorders and Physiotherapy-** Congenital talipesequinovarus (CTEV), Congenital dislocation or dysplasia of hip, Idiopathic scoliosis, congenital muscular torticollis, arthrogryposis, osteogenesis imperfect,

7. **Infection of bones and joints and Physiotherapy-** Osteomyelitis, Tom smith arthritis, Pyogenic arthritis, Pott’s spine

8. **Inflammatory conditions and Physiotherapy-** Juvenile rheumatic arthritis.

9. **Traumatic-** Limb and spinal fracture

10. **Clinical decision making in prosthetic and orthotic prescription in pediatrics**

11. **High risk infants-** Low birth weight, prematurity, spina bifida, seizures disorder.

12. **Physiotherapy in central nervous system and peripheral nervous system-** cerebral palsy, hydrocephalus, Syringomyelia, Facial palsy, Obstructed Erb’s palsy.

13. **Physiotherapy in inherited disorders, traumatic injuries, infectious diseases-** Myopathies &Dystrophies, Traumatic brain injury, Spinal cord injury, Meningitis, Encephalitis & GBS.

15. **Psychological and behavioral disorder** - Learning disabilities, Autism & pervasive disorder, ADHD, Developmental Coordination Disorder, Perception and sensory disorder

16. **Clinical decision making in fitness and exercise prescription for special pediatric population** - Cerebral palsy, Down’s syndrome, Polio, Muscular dystrophies, Obesity

17. **Tumors and physiotherapy: physical and functional diagnosis in oncology and palliative care**

18. **Recent advances in pediatric physiotherapy**

19. **Functional assessment**

20. **Introduction of current concept in pediatric science** - Hippotherapy, Kangaroo mother care, Botox and physiotherapy management, stem cell therapy and physiotherapy management,
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Syllabus For: Community Physiotherapy -Paper II

1. Health and Illness; Levels of Healthcare & Fitness
2. Principles and practice of fitness training for health promotion in community
3. Basic Concepts of rehabilitation and foundations of rehabilitation
4. Institute based rehabilitation services and multi-disciplinary approach.
5. Methodology of CBR with reference to National Health Delivery system.
6. Role of National Institutes, District Rehabilitation Centre and Primary Health Centre (with appropriate exposure).
7. Public awareness to the various disabilities. Communications, Message generation and dissipation.
10. Appropriate Technology, Assistive devices used for Stability & Mobility to enhance function
11. Home exercise programs for various classifications of disabilities.
12. Physical fitness, stress management through yoga and psychosomatic approaches.
13. Principles and practice of Rehabilitation and outreach services including domiciliary services
15. Role of Non-Government organizations in CBR.
17. Physiotherapist as a Master Trainer in CBR.
18. Disaster management team ,Disaster cycle ,Role of physiotherapist in Disaster management ,Advances in Disaster management
19. Evaluation and theories of aging; Assessment of the elderly;
20. Exercise prescription for the elderly; Psychosocial and safety issues in elderly

21. Geriatric Rehabilitation

22. Holistic physiotherapy for the aged.

23. Electrotherapy in geriatric conditions

24. Physiotherapy in maternal and child health care.

25. Women’s Health: Women’s reproductive health and health care;

26. Assessment and exercise prescription for antenatal and post-natal females ‘

27. Diagnosis and treatment of musculoskeletal pain and dysfunction during pregnancy

28. Diagnosis and treatment of musculoskeletal pain and dysfunction during post menopause.

29. Treatment of Incontinence and Pelvic floor dysfunction; Special problems related to women

30. Clinical reasoning and recent advances in Electrotherapy in obstetrics and gynecological conditions.

31. Occupational Health, Occupational Hazards, Industrial Hygiene, Vulnerable workers group and labor law;

32. Industrial therapy, Injury prevention and returning the worker to productivity

33. Ergonomics, Principles, Issues related to hand tools, posture, material handling and lifting

34. Prevention of work related Injuries and redesigning workspace, Designing auditory and visual displays for workers; Occupational stress; Environmental Pollution – nose, vibration etc.

35. Physiotherapy role in industry – preventive, intervention, ergonomic and rehabilitative.

36. Recent Advances in Women’s Health, Industrial Health and Geriatric Health in Community Physiotherapy.

37. Evidence Based Practice in Community Health.

38. Vocational rehabilitation: Overview, Indications, Types of employment, Role of vocational counselor, Role of physiotherapist

39. Oncology rehabilitation: Overview, Types of cancer, screening and diagnosis, Treatment of cancer, Physiotherapy Management of cancer, Palliative care, Recent advances
40. **Wound Healing**: Overview, Stages of healing, Assessment of wound, Management of wound, Recent advances in wound healing


3. **Cell Biology & Cell Signaling**: Membrane structure and function, Structural organization and function of intracellular organelles, Organization of genes and chromosomes, Cell division and cell cycle (Mitosis and meiosis, their regulation, steps in cell cycle, regulation and control of cell cycle). Cancer: Genetic rearrangements in progenitor cells, oncogenes, tumor suppressor genes, cancer and the cell cycle, metastasis, interaction of cancer cells with normal cells, therapeutic interventions of uncontrolled cell growth, Programmed cell death, aging and senescence, Cell signaling: General principles of cell communication, cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, neurotransmission and its regulation. Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors, signal transduction pathways, second messengers, regulation of signaling pathways.

4. **Microbiology**: Historical perspectives; Pure culture techniques. General outline and classification of viruses, fungi, bacteria and molecular taxonomy. Archaea, Microbial growth, Microbial nutrition and metabolism, Microbes and environment, Microbial diseases, Antibiotics: Types, mode of action, resistance and mechanism, virulence factors, pathogenesis, treatment, prevention and control of infectious diseases.

5. **Bioinstrumentation & Biostatistics**: Centrifugation Techniques Chromatographic Techniques, Electrophoretic Techniques, Spectroscopic techniques, Radiolabeling techniques Microscopic techniques, Statistical Methods: Measures of central tendency and
dispersion; probability distributions (Binomial, Poisson and normal); Sampling distribution; parametric and non-parametric statistics; Confidence Interval; Errors; Levels of significance; Regression and Correlation; t-test; Analysis of variance and multiple range tests, chi-square test, experimental design, data transformation

6. **Molecular Biology:** DNA replication, repair and recombination, RNA synthesis and processing, Protein synthesis and processing, Control of gene expression at transcription and translation level.

7. **Genetics:** Mendelian principles, Concept of gene, Extensions of Mendelian principles, Gene mapping methods, Extra chromosomal inheritance, Microbial genetics, Human genetics, Mutation, Structural and numerical alterations of chromosomes, Recombination, Population genetics


9. **Immunology:** Innate and adaptive immune system: Cells and molecules involved in innate and adaptive immunity, antigens, antigenicity and immunogenicity. B and T cell epitopes, structure and function of antibody molecules, generation of antibody diversity, monoclonal antibodies, antigen-antibody interactions, MHC molecules, antigen processing and presentation, activation and differentiation of B and T cells, B and T cell receptors, humoral and cell-mediated immune responses, inflammation, hypersensitivity and autoimmunity, vaccines. Histochemical and Immunotechniques: Antibody generation, Detection of molecules using ELISA, RIA, western blot, immunoprecipitation, fluocytometry and immunofluorescence microscopy.

10. **Developmental Biology:** Basic concepts of development: Potency, commitment, specification, induction, competence, determination and differentiation; morphogenetic gradients; cell fate and cell lineages; stem cells; genomic equivalence and the cytoplasmic determinants; imprinting; mutants and transgenics in analysis of development, Gametogenesis, fertilization and early development: Production of gametes, cell surface molecules in gamete recognition; zygote formation, cleavage, blastula formation, gastrulation and formation of germ layers.

11. **Recombinant DNA Technology:** Isolation, purification, analysis of RNA and DNA (genomic and plasmid). Molecular cloning of DNA and RNA fragments in cloning vectors and expression. Construction of genomic and cDNA libraries and screening. DNA sequencing methods, strategies for genome sequencing. Methods for analysis of gene expression at RNA and protein level, micro array, DNA chips. PCR, RFLP, Southern and Northern blotting, AFLP techniques, Real-time PCR. In situ localization, FISH and GISH.

12. **Bioprocess and Microbial Technology:** Primary and secondary metabolites, Batch culture, the growth cycle, effect of nutrients, energetics of growth. Design of bioreactors, Transport phenomena in bioprocess, Downstream processing of biological, Microbial products,
Microbes for sustainable agriculture: Biological nitrogen fixation, Biofertilizers, Biological control, Biopesticides.

13. **Bioinformatics**: Biological Databases, Information Retrieval from Biological Databases, Unique Requirements of Database Searching, Heuristic Database Searching, Basic Local Alignment Search Tool (BLAST), FASTA, Comparison of FASTA and BLAST.


   Health Counseling- Introduction, theories, process & techniques, Stigma and discrimination: Definitions, context and role of stigma and discrimination in health and disease, Counselor- Personal and interpersonal development of the Counselor.

3. **Epidemiology** - Basic principles, Uses of Epidemiology, Epidemiological methods: Descriptive Epidemiology, Analytical Epidemiology, Experimental Epidemiology, Epidemiological study designs –Descriptive (cross-sectional), analytical (case control & Cohort) and experimental, Epidemic investigations, Association and causation, Risk measurement, Measurement of morbidity and mortality: Incidence, Prevalence


5. **Communicable & Non Communicable diseases** - Communicable diseases -Biology, pathogenesis and pathology, clinical presentation of common infections –Respiratory, Intestinal, Contact, Vector borne. Disease prevention and control, Malnutrition and infection, Health aspects of Disaster management.
   Non-Communicable Diseases- New approaches and policies of NCDs, NCDs programs of WHO, PAHO, and Government of India. Etiology, Pathophysiology, Epidemiology, Prevention and Control. -Asthma, Cancer, Cardiovascular diseases, Chronic, rheumatic diseases, Diabetes, Tobacco use, Mental Health, Emerging & re-emerging diseases.
   

7. **Occupational, Industrial and Urban Health** - Occupational Health – Prevention, promotion, access to health services, legal aspects, Occupational Safety & Health, Occupational health disorders and diseases, Industrial Hygiene, Ergonomics, Industrial Psychology, Occupational Services at workplace, Occupational health of working population of organized and unorganized sectors - Farmers, Industrial Workers, health workers, CSW, etc., Urban population: Determinants of urban health, Consequences of urbanization and Urban health services, Concept of urban health planning and practices


