

BHAGWANT UNIVERSITY
Sikar Road, Ajmer
Rajasthan



Syllabus

BPT Course

BHAGWANT UNIVERSITY
BACHELOR OF PHYSIOTHERAPY

YEAR I

Subject Code	Name of Subject	Teaching Period			Credits
		L	T	P	
01BPT01 101	Anatomy	3	1	0	4
01BPT01 102	Physiology	3	1	0	4
01BPT01 103	Psychology & Sociology	3	1	0	4
01BPT01104	Fundamentals of Biomechanics & Exercise Therapy	3	1	0	4
01BPT01105	Principles of Bioelectrical Modalities	3	1	0	4
01BPT01106	Biochemistry	3	1	0	4
01BPT01 201	Practical Anatomy	0	0	2	1
01BPT01 202	Practical Physiology	0	0	2	1
01BPT01203	Practical Fundamentals of Biomechanics & Exercise Therapy	0	0	2	1
01BPT01 301	Discipline & Extra Curricular activities	0	0	4	1
TOTAL		18	6	10	28

YEAR II

Subject Code	Name of Subject	Teaching Period			Credits
		L	T	P	
02BPT01 101	Pathology & Microbiology	3	1	0	4
02BPT01 102	Pharmacology	3	1	0	4
02BPT01 103	Medicine & Paediatrics	3	1	0	4
02BPT01 104	General Surgery	3	1	0	4
02BPT01 105	Exercise Therapy	3	1	0	4
02BPT01 106	Electro Therapy	3	1	0	4
02BPT01 201	Practical PT-Clinicals	0	0	2	1
02BPT01 202	Practical Exercise Therapy	0	0	2	1
02BPT01203	Practical Electro Therapy	0	0	2	1

02BPT01 301	Discipline & Extra Curricular activities	0	0	4	1
TOTAL		18	6	10	28

YEAR III

Subject Code	Name of Subject	Teaching Period			Credits
		L	T	P	
03BPT01 101	Neurology including Psychiatry	3	1	0	4
03BPT01 102	Orthopaedics	3	1	0	4
03BPT01 103	Obstetrics & Gynaecology	3	1	0	4
03BPT01 104	Applied Biomechanics & Kinaesiology	3	1	0	4
03BPT01 105	Physiotherapeutic in Neurology	3	1	0	4
03BPT01 106	Physiotherapeutic in Orthopaedic	3	1	0	4
03BPT01 201	Practical PT-Clinicals	0	0	2	1
03BPT01 202	Practical Physiotherapeutic in Neurology	0	0	2	1
03BPT01 203	Practical Physiotherapeutic in Orthopaedic	0	0	2	1
03BPT01 301	Discipline & Extra Curricular activities	0	0	4	1
TOTAL		18	6	10	28

YEAR IV

Subject Code	Name of Subject	Teaching Period			Credits
		L	T	P	
04BPT01 101	Community Rehabilitation & Disability Prevention	3	1	0	4
04BPT01 102	Research Methodology & Biostatistics	3	1	0	4
04BPT01 103	Physiotherapeutic in General & Cardio thoracic	3	1	0	4
04BPT01 104	Physiotherapeutic in Sports	3	1	0	4
04BPT01 201	Practical PT-Clinicals	0	0	2	1
04BPT01 202	Practical Physiotherapeutic in General & Cardio thoracic	0	0	2	1
04BPT01 203	Practical Physiotherapeutic in Sports	0	0	2	1
04BPT01 204	Project Work		0	16	8
04BPT01 301	Discipline & Extra Curricular activities	0	0	4	1
TOTAL		12	4	26	28

NOTE: - INTERNSHIP OF SIX MONTH

YEAR I

ANATOMY

Course/Paper: 01BPT01101

BPT YEAR I

General Anatomy:

- Introduction to Anatomy, terms and terminology
- Regions of Body, cavities and Systems outline.
- Surface anatomy - musculo-skeletal and cardiopulmonary
- Cell Structure and function of cell organelles (Brief outline only).

- Connective tissue & its modification, tendons, membranes, Special connective tissue.
- Bone structure, blood supply, growth, ossification, and classification.
- Muscle classification, structure and functional aspect.
- Nerve - structure, classification, microscopy with examples.
- Neurons, classification with examples. Simple reflex arc.
- Parts of a typical spinal curve/Dermatome
- Joints - classification, structures of joints, movements, range, limiting factors, stability,
- Blood supply, nerve supply, dislocations and applied anatomy.
- Circulatory system - major arteries and veins of the body, structure of blood vessels
- Lymphoid system - circulation + function, lymphoid organs- and their structure & functions.
- Upper extremity:
 - Bony architecture
 - Joints - structure, range of movement
 - Muscles - origin, insertion, actions, nerve supply
 - Major nerves - course, branches and implications of nerve injuries
 - Development of limb bones, muscles and anomalies
 - Radiographic identification of bone and joints

Lower Extremity:

- Bony architecture
- Joints - structure, range of movement
- Muscles - origin, insertion, actions, nerve supply
- Major nerves - course, branches and implications of nerve injuries
- Development of limb bones, muscles and anomalies
- Radiographic identification of bone and joints

Spine:

- Back muscles - Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply.
- Vertebral column - Structure & Development, Structure & Joints of vertebra
- Radiographic identification of bone and joints

Thorax:

- Thoracic cage
- Pleural cavities & pleura
- Lungs and respiratory tree
- Heart and great vessels
- Diaphragm

Head and neck:

- Cranium
- Facial Muscles
- Central nervous system - disposition, parts and functions
- Cerebrum

- Cerebellum
- Midbrain & brain stem
- Blood supply & anatomy of strokes
- Spinal cord- anatomy, blood supply, nerve pathways
- Pyramidal, extra pyramidal system
- Thalamus, hypothalamus
- Ventricles of brain, CSF circulation
- Development of nervous system & defects (Brief Description)
- Cranial nerves - special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
- Sympathetic nervous system, its parts and components (Brief Description)
- Parasympathetic nervous system (Brief Description).

Miscellaneous:

- a. Embryology in brief covering neuromuscular developmental aspects
- b. Endocrine - system - Pituitary, Thyroid, parathyroid (Brief Description)
- c. Special senses (Brief Description): Nerve receptors, Eye, Ear, Labyrinth
- d. Abdomen and pelvis (Brief descriptions only)
 - Abdominal cavity - divisions
 - Muscles of abdominal wall, pelvic floor, innervations
 - Bony Pelvis
 - Digestive system (Liver & pancreas, Alimentary canal)
 - Urinary system - Kidney, Ureter, bladder, urethra

Genital system - male and female

References

1. Caurasia, B D, human anatomy: regional & applied, CBS, 2004.
2. Chaurasia, B D, Human Osteology CBS, New Delhi 1991
3. Singh Inderbir, text of anatomy with colour atlas, jaypee, new delhi, 1999
4. Singh, Inderbir text of neuroanatomy, jaypee, new delhi, 1999

PHYSIOLOGY

Course/Paper: 01BPT01102

BPT YEAR -I

General Physiology

- Structure of cell membrane
- Transport across cell membrane
- Functional morphology of the cell
- Intercellular communication
- Homeostasis
- Cardiovascular System
- Dynamics of blood & lymph flow

Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation

- Origin and spread of cardiac excitation
- Basic idea of Electrocardiogram
- Mechanical events of Cardiac cycle, Cardiac output, its regulation
- Local & systemic regulatory mechanisms of CVS, humeral & neural
- Cerebral, coronary, splanchnic, skin, Placental & Fetal circulation

Respiratory System

- Physiological anatomy of lungs, mechanics of respiration
- Pulmonary circulation, Gas exchange in lungs
- Oxygen & Carbon dioxide transport
- Other function of respiratory system
- Neural & chemical control of breathing
- Regulation of respiratory activity, non-chemical influences on respiratory activity

Cardio respiratory adjustments in health & disease

- Exercise, high altitude, deep sea diving
- Hypoxia, hypercapnia, hypocapnia, oxygen treatment
- Asthma, emphysema, artificial respiration

Blood

- W.B.C., R.B.C., Platelets formation & functions
- Plasma, Blood Groups
- Haemostasis, Immunity

Renal System

- Glomerular filtration rate, clearance, Tubular function
- Water excretion, concentration of urine-regulation of Na, Cl, K excretion
- Physiology of urinary bladder

Nerve- Muscle and Synaptic & Junction Transmission

- Nerve - General Concept
- Nerve cell - structure
- Genesis of resting membrane potential & Action potential
- Their ionic basis, All or None phenomenon
- Ionic basis of nerve conduction
- Classification & types of nerve fibre
- Mixed nerves & compound action potential
- Concept of nerve injury & Wallerian degeneration
- Muscle properties and functions
- Electric & Mechanical responses & their basis
- Concept of isometric & isotonic muscle contraction
- Electrical events in postsynaptic neurons

- Inhibition & facilitation at synapses
- Chemical transmission of synaptic activity
- Principal neurotransmitter system
- Neuromuscular junction, structure & events occurring during excitation

Digestive System

- Digestion & absorption of nutrients
- Gastrointestinal secretions & their regulation
- Liver & Exocrine Pancreas

Functions of Nervous system (descriptive)

- Reflexes, monosynaptic, polysynaptic, withdrawal reflex
- Properties of reflexes
- Sense organ, receptors, electrical & chemical events in receptors
- Ionic basis of excitation
- Sensory pathways for touch, temperature, pain, proprioception, others
- Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions & clinical aspects
- Autonomic nervous system & Hypothalamus
- Higher functions of nervous system
 - a) Learning & memory, neocortex,
 - b) Limbic functions, sexual behaviour, fear & range, motivation

Miscellaneous

- a) Special senses
- b) Endocrinology
- c) Male & female reproductive system

References

1. Chatterji, C.C., Human Physiology, medical allied, 1997
2. Keele, Cyril A, Samson Wright's Applied Physiology, Oxford university press, 1998

PSYCHOLOGY & SOCIOLOGY

Course/Paper: 01BPT01103

BPT YEAR-I

What is psychology? Fields of application of psychology, influence of heredity and environment on the individual

Learning - theories & principles learning

Memory, Forgetting, theories of memory and forgetting, thinking & methods to improve memory

Thinking - process, problem solving, decision making and creative thinking

Motivation - theories and types of Motivation

Emotions - theories of Emotions and stress

Attitudes - theories, attitudes and behavior, factors in attitude change

Intelligence - theories of intelligence

Personality, theories of personality, factors influencing personality

Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age

Behavior - normal and abnormal

Counseling - Definition, Aims and principles

Psychotherapy - brief introduction to paradigms in psychopathology and therapy

Psychological need of children and geriatric patients

Communication - effective and faulty

Emotional and behavioral disorders of childhood and adolescence- (in brief)

- a. Disorders of under and over controlled behavior
- b. Eating disorders

Mental deficiency-

- c. Mental retardation,
- d. Learning disabilities
- e. Autistic behavior

Anxiety Disorders -

- f. Phobias, panic disorder,
- g. Generalized Anxiety disorder,
- h. Obsessive Compulsive Disorder,
- i. Post -traumatic Stress Disorder

Somatoform and Dissociate Disorders -

- a) Conversion Disorder,
- b) Somatization Disorder,
- c) Dissociate Amnesia & Dissociate Fugue

Personality Disorder

Patho-physiological Disorders - stress and health

Severe psychological disorders - Mood disorders, psychosis

Meaning-Definition and scope of Sociology Its relation with Anthropology, Psychology, Social Psychology and ethics.

Methods of Sociology-case study, Social Survey, Questionnaire, interview and opinion poll methods. Importance of its study with special reference to health care professionals.

Social Factors in Health and Disease:

The meaning of Social Factors.

The role of Social factors and illness. C-Socialization:

1. Meaning and nature of Socialization.
2. Primary, Secondary, and Anticipatory Socialization.
3. Agencies of Socialization.

Social Groups:

1. Concepts of social groups.
2. Influence of formal and informal groups on health and sickness.

The roll of primary groups and secondary groups in the hospital and rehabilitation settings.

Family:

1. The family - Meaning and definition, Functions
2. Changing family Patterns
3. Influence of family on the individual health, family, and nutrition.
4. The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy

Community:

1. Rural community - Meaning and features - Health hazards of rural population

Urban community - Meaning and features Health hazards of urban population

Culture and Health:

1. Concept of culture
2. Cultures and Behavior
3. Cultural meaning of sickness
4. Culture and health disorders H-Social change:
5. Meaning of social changes & Factors of social change.
6. Human adaptation and social change.
7. Social change and stress.
8. Social and deviance.
9. Social change and health Program.
10. The role of social planning in the improvement of health and in rehabilitation. I-Social problems of disabled:

Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems

1. Population explosion.
2. Poverty and unemployment.
3. Beggary.
4. Juvenile delinquency.
5. Prostitution.
6. Alcoholism.
7. Problems of women in employment.

Social security: Social security and social legislation in relation to the Disabled. K-Social worker: Meaning of social work; the role of a medical social worker

References

1. MORGAN, CLIFFORD t, Introduction to Psychology, Tata Mc Graw Hill, Delhi. 1999
2. FArnald L.D., Introduction to Psychology, AITBS, Delhi.1999
3. 3..Korchin, Sheldon J. Modern Clinical Psychology, Prncipals, CBS New Delhi.1999

FUNDAMENTALS OF BIOMECHANICS & EXERCISE THERAPY

Course/Paper: 01BPT01104

BPT YEAR-I

Mechanics - Definition of mechanics and Biomechanics

Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle

Momentum - principles, and practical application, Friction

Gravity - Definition, line of gravity, Centre of gravity

Equilibrium - Supporting base, types, and equilibrium in static and dynamic state

Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body.

Pulleys - system of pulleys, types and application.

Elasticity - Definition, stress, strain, HOOKE'S Law

Springs - properties of springs, springs in series and parallel, elastic materials in use

Aims and scope of various biomechanical modalities - shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights

Normal Posture - definition & description, static and dynamic, alignments of various joints, centre of gravity, planes & muscular moments, and Analysis of posture

Movements - Anatomical definition and description, Movements and exercise as therapeutic modality and their effects, Physiological reaction of exercise

Traction - Rationale, Technique, indications & contra-indications

Normal Gait - definition & description, alignments, centre of gravity during gait cycle, planes & muscle acting mechanisms, pattern, characteristics Normal gait cycle, time & distance parameters, & determinants of Gait

Starting positions - Description and muscle work, Importance of fundamental and derived types, Effects and uses of individual positions

Soft tissue manipulation - History, definition, types and their rationale, general effects, local effects of individual manipulation (physiological effects) and uses, contra-indications and techniques of application

References

1. Hollis M. & Cook, P.F. Practical Exercise Theory, CBS, New Delhi, 1999
2. Gardiner, Dena Principles of Exercise Therapy, CBS, New Delhi, 1999

PRINCIPLES OF BIO-ELECTRICAL MODALITIES

Course/Paper: 01BPT01105

BPT YEAR-I

Fundamentals of Electricity & Magnetism

DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bound and free electrons, free electrons and current, static electric charge, charging of an object potential and capacitance, potential difference and EMF

A. C. currents: Sinusoidal wave form, frequency, wavelength, Amplitude and phase of a sine wave, Average & RMS value of a sine wave

Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm's law, resistances in series and parallel

Capacitors: Electric field around a capacitor, charging and discharging a capacitor, types of capacitor with application of each in Physiotherapy department

Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department

Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention

Magnetism: Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz's law, Inductor and Inductance types of inductor, reactance and impedance.

Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Construction and application of Cathode Ray Oscilloscope

Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices. Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits

Electronic Circuits: Rectifiers & smoothing circuits, Oscillators - Sinusoidal and non-sinusoidal types

A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters, Wheat stone bridge

Introduction to Therapeutic Energies - Thermal, Mechanical, Electrical, Electromagnetic and magnetic - Definition, description, physiological effects, pathological effects and dangers

Medical Instrumentation For Physical Therapy: Brief description of generation, circuit diagrams and testing

Low frequency currents, Direct currents, Medium frequency currents

Short wave Diathermy-continuous and pulsed

Microwave Diathermy

Ultrasound

Actino-therapy - Infrared, UVR and Lasers

Note: emphasis is given only to generation circuit diagram and testing of the various electrotherapies

References

1. Froster A & Palastanga,N, Clayton's Electrotherapy: Theory &Practise, AITBSDelhi,1999.
2. Jhon,Low & Ann, Reed, Electrotherapy Explained: Principles, Butterworth Heine, Oxford.

BIOCHEMISTRY

Course/Paper: 01BPT01106

BPT YEAR-I

Nutrition: Basic principles of nutrition; Carbohydrates, Proteins and Lipid caloric requirement and balance diet.

Carbohydrates: Definition, classification with examples and general functions. Metabolism - Glycolysis, T.C.A Glycogen metabolism, Blood Sugar regulation, Diabetes and diabetic keto-acidosis

Lipids: Definition, classifications and general functions. Essential fatty acids, cholesterol, Blood lipids. Brief review of lipoproteins. Metabolism-Oxidation of fatty acids, cholesterol synthesis, and fatty liver.

Proteins: Definition, classification, and Bio-medical Importance.

Study of hemoglobin and immunoglobulins with functions.

Plasma Proteins and functions. Metabolism: General reactions of amino acids. Formation and fate of ammonia - Urea cycle.

Tissue chemistry: Chemistry of connective tissue, bone and teeth. Composition function and chemical mediators of nerve structure of muscle tissue. General Biochemistry of muscle contraction and relaxation.

Enzymes: Definition, classification with examples. Factors affecting enzyme action. Brief study of enzyme inhibition. Clinical importance of enzymes.

Vitamins: Definition, classification and functions. Dietary source, Daily requirement and deficiency disorders.

Water and Electrolyte Balance: General outline of fluid compartments of the body with their water and electrolyte content and balance, Dehydration.

References

1. Ahuja, Lakshmi, CBS Quick Review in Bio Chemistry, CBS, New Delhi, 1999
2. Chatterji, MN, Text Book of Medical Biochemistry, Jaypee, Bangalore, 1999

PRACTICAL ANATOMY

Course/Paper: 01BPT01201

BPT YEAR-I

Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves. The learning of anatomy is by demonstration only through dissected parts, slides, models, charts, etc.

Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain)

Demonstration of skeleton articulated and disarticulated.

During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.

Students will be viva only based upon learning in theory, demonstration of bones, and joints, muscles, nerves and major viscera.

PRACTICAL PHYSIOLOGY

Course/Paper: 01BPT01202

BPT YEAR-I

Examination of pulse, B.P., respiratory rate, & measure study the effect of posture & exercise.

Spirometry to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometry (demonstration only)

Estimate of Haemoglobin, T.R.B.C., T.W.B.C. count (demonstration only)

Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only)

Students will be assessed by viva based upon learning in theory. Demonstration of measurements of pulse, BP.

PRACTICAL FUNDAMENTALS OF BIOMECHANICS & EXERCISE THERAPY

Course/Paper: 01BPT01203

BPT YEAR-I

Demonstration of Biomechanical principles

Study of structure, function and application of various Biomechanical modalities - shoulder wheel, shoulder ladder, shoulder pulleys, pronator- supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights, etc. Study of structure, function and application of suspensions, Demonstration and practice of

- soft tissue manipulative techniques
- normal gait and posture
- starting and derived positions
- spinal mechanical traction

Students will be assessed by viva based upon learning in theory, demonstrations of various biomechanical modalities, suspensions, and manipulative techniques learned.

YEAR II

PATHOLOGY & MICROBIOLOGY

Course/Paper: 02BPT01101

BPT YEAR-II

Inflammation, injury and repair.

Oncology: Classification, gross pathological state, cancer pain syndrome (Brief description)

Skin: Etio-pathogenesis, gross pathology of commonly occurring skin Diseases, Burns, Pressure ulcers (Brief description)

Cardiovascular system: Etio-pathogenesis, gross pathology of conditions- aging, IHD, MI, CCF, HT, RHD, Congenital heart disease, Arteriosclerosis, Thrombo-angitis, Vasomotor-Raynaud's, venous thrombosis, Gangrene, Lymph edema

Haematology: (Brief description) - Etio-pathogenesis, gross pathology of conditions-anaemia, polycythaemia, leukaemia, haemolytic disease, and haemophilia

Respiratory system: Etio-pathogenesis, gross pathology of conditions - aging, Pneumonia, Pulmonary TB, Bronchiectasis, COPD, Bronchial Asthma, Restrictive Lung disease, Occupational lung disease.

Musculoskeletal system: Etio-pathogenesis, gross pathology of conditions - osteomalacia, Osteoporosis, Osteomyelitis, Osteoarthritis, rheumatoid arthritis, Gout, spondyloarthropathy, Osteonecrosis, Myofascial pain syndrome. Biological responses to trauma, bone and soft tissue immobilization

CNS AND PNS: Etio-pathogenesis, gross pathology of conditions - Aging, Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple Sclerosis, stroke, Neuropathies (Carcoat Marie Tooth's disease, Compression and entrapments, diabetic, G.B syndrome), Poliomyelitis and post-polio syndrome, Myasthenia Gravis

Immunology: Brief description of immune system, immunity, immune responses & immune deficiency Immunology, Hypersensitivity disorders

Infectious diseases: Brief description of classification of microorganisms, identification, Sterilization and disinfections with special reference to principles of antisepsis and prevention of communicable diseases in clinical practice

Brief description of identification of infectious diseases; principles of prevention of infectious diseases caused by common pathogens - streptococci, staphylococci, gonococci, Meningococci, salmonella, V. cholerae, E. coli, shigella, tetanus, Diphtheria,

M. leprae, M. tuberculosis, Poliomyelitis, Rabies, Malaria, Amoebiasis, Helminthiasis, Scabies, ringworm, candidiasis.

References

1. Chakraborty, P. Textbook of Microbiology, NCB, Calcutta, 1999
2. Ananth Narayan, R. Text Book of Microbiology, Orient Longman, Madras, 1986.

PHARMACOLOGY

Course/Paper: 02BPT01102

BPT YEAR-II

General Pharmacology (brief description only):

- a) Introduction & general concepts
- b) Pharmaco-kinetics (routes of administration, metabolism & elimination)
- c) Pharmaco-dynamics (mechanism of drug action, therapeutic & side effects, toxicity)

Autonomic Nervous System:

- a) Brief outline of Sympathetic-parasympathetic nervous system
- b) Therapeutic agents-uses, effects .

Central Nervous System:

- a) Anaesthetic agents- uses, side effects
- b) Sedatives and hypnotics - uses, side **effects** Anti epileptic drugs- uses, side effects
Analgesics - uses, side effects Anti inflammatory drugs- uses, side effects
- c) Psychotherapeutic agents- uses, side effects
- d) Alcoholism and drug dependence
- e) Therapeutic agents used for movement disorders- uses, side effects

Cardio-vascular System:

- a) Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)

b) Drugs used in cardiac failure, hypertension & arrhythmias Drug therapy in vascular disease & ischaemia

Respiratory system:

Therapeutic agents - uses, side effects

Gastrointestinal system:

Therapeutic agents in Peptic ulcer, Diarrhoea- uses, side effects

Endocrinal hormones: Thyroid, adrenal, parathyroid hormones - uses, side effects Diabetes mellitus:

Drug therapy 9. Geriatrics:

Pharmacological challenges in geriatric age group

References

1. Tripathi, K.D. Essentials of medical Pharmacology, New Delhi, 1985
2. Laurence, D.R. Clinical Pharmacology, ELBS, London, 1975

MEDICINE & PAEDIATRICS

Course/Paper: 02BPT01103

BPT YEAR-II

Introduction: Brief outline of subject of medicine, a medical patient, common signs & symptoms of disease

Infectious Diseases: Brief description of concept of infection, types, classification & common clinical manifestation of infection and general principle of management (No specific infections)

Nutritional & Metabolic Diseases: Brief description of following diseases along with outline of management: Diabetes Mellitus, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies, and Obesity

Alimentary tract: Brief description of manifestations of alimentary tract disease & general principle of diagnosis & outline of management of following diseases: Peptic ulcer disease, common infections of small & large intestine

Brief description of liver diseases along with outline of management: Hepatitis, & Jaundice

Diseases of the blood: Brief description of manifestations along with outline of management of common blood diseases - Anaemia, Leukaemia, Coagulopathy

Diseases of connective tissues: Brief description of manifestations along with outline of management of - SLE, polymyositis

Diseases of skin: Brief description of manifestations along with outline of management of common skin diseases - scabies, pediculosis, taeniasis, impetigo & psoriasis

Geriatrics- physiology of ageing, manifestations of diseases in old people and general principles of management. Implications of aging in physical therapy. lung disease, Pleurisy & Pulmonary embolism

First Aid in common Medical Emergencies

Cardio-vascular System: Manifestations of heart & vascular disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Cardiac failure, Ischaemic heart disease, hypertension, atherosclerosis, Deep vein thrombosis

Respiratory System: Manifestations of respiratory disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Obstructive Pulmonary diseases (Bronchial Asthma, COPD), pulmonary infections (Pneumonia, Bronchitis, Lung abscess, Tuberculosis), Respiratory failure, occupational

Normal Growth and development of child - motor, mental, language and social

Pathological presentations of growth and development disorders

Common infectious diseases in children: Brief description of following infectious diseases along with outline of management: Tetanus, diphtheria, Mycobacterial, measles, chicken pox, gastroenteritis, HIV, and Malaria

Immunization programmes - WHO schedule, different vaccinations, rationale; special consideration to various disease eradication programmes like Pulse-Polio

Child and nutrition - Nutritional requirements, malnutrition syndrome, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies in children and management in brief

Clinical presentation, management & prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy

Childhood rheumatism-types, clinical presentation, & management in brief

Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief

Clinical presentation, management & prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB (in brief)

Clinical presentation, management & prevention of the following cardiac conditions: Rheumatic heart disease, SABE, Congenital heart disease - ASD, VSD, PDA (in brief)

References

1. Chemberlin E. N & Ogilvie, C, Symptoms & signs in Clinical Medicine, Jhon Wright, 1974
2. Swash, Micheal, HUTchisons, Clinical Methods, W.B.Saunders, London, 2000

GENERAL SURGERY

Course/Paper: 02BPT01104

BPT YEAR-II

Introduction to Surgery, surgical patient, principles of surgical examination (Brief description)

Anesthesia: Brief description of events of General Anesthesia, potential complications & outline of management

Common types of wounds, scars, ulcers, boils - clinical feature and out line of treatment

Burns: causes, classification, complications, conservative management of patients. Management of burns & wound scars

Brief outline of nutritional support, pain relief of a surgical patient

Abdominal wall: brief surgical anatomy

Brief description of various types of abdominal incisions, external opening of abdominal viscera (colostomy) resultant potential complications and management

Brief description of causes, clinical presentation and management of various types of hernias

General principles of plastic surgery and postoperative management

Cranium:

a. Head injuries - classification, clinical features, complications & management

Intra-cranial disorders - clinical features, complications & management of brain abscess, space occupying lesion, hydrocephalus, vascular malformation (brief)

Nerve injuries - causes, clinical features of Cranial (V, VII) & peripheral nerve injuries (major nerves), complications & management

Vertebral column injuries - classification, clinical features, complications & management

Vascular Disorders: clinical features, complication & management of Arterial occlusion, dilatations, arteritis, small vessel abnormalities

a. Gangrene - classification, brief clinical features & management

b. Amputations - causes & types

Superficial & deep vein thrombosis - pathogenesis, prevention & management. Lymph edema - brief outline of causes, clinical features & management

Thorax:

Chest injuries - classification, causes, clinical features, complications & management Pulmonary resection - causes, outline of surgical management, pneumothorax, haemo - pneumothorax

Heart: - brief description of various surgical heart diseases with respect to clinical presentation, complications and management - valvular heart disease, congenital heart disease -e.g., ASD, VSD, PDA, Ischaemic heart disease. Outline of postoperative complications in cardiac surgery and their management

Brief description of first aid principles of cardio-pulmonary resuscitation and trauma.

References

1. Russell, RCG, Short practice in surgery, Arnold, London, 2000
2. Gupta, R.L. Text Book Of surgery, Jaypee, New Delhi, 1996

EXERCISE THERAPY

Course/Paper: 02BPT01105

BPT YEAR-II

Manual Muscle Testing:

- Concept, introduction, significance and limitations.
- Grade systems
- Techniques of Muscle testing.
- Emphasis on skills to grade upper, lower limb, neck and trunk muscles including trick movements.

Goniometry

- Measurement of various joints range in normal and disease condition.
- Different techniques of goniometry.
- Limb length measurements

Passive movements:

- Definition
- Relaxed, forced and stretching type.
- Indications, contraindications, advantages and Techniques of various passive movements.

Active movements:

- Free, assisted and resisted

- Indication, contraindications, advantages and techniques of various types of active exercises.
- Special emphasis on: Shoulder abductors & flexors, Triceps brachii, Hip abductors & flexors, quadriceps femoris, Abdominal and back extensors.
 - Clinical methods of strengthening of various muscle groups.
 - Muscle Stretching:
- Stretching - definition, effects and uses of stretching, indications, contra indications, general techniques & group stretching techniques
- Special emphasis on stretching of: Pectoral major, biceps brachii, triceps brachii, and long flexors of fingers. Rectus femoris, Ilio-tibial band, gastrocnemius-soleus, hamstrings, hip abductors, ilio-psoas. Sternocleidomastoid

Relaxation:

- Description of fatigue and spasm & factors.
- General causes, signs and symptoms of fatigue
- Techniques of Relaxation- local and General with indication
- Rationale of relaxation Techniques.

Joint Mobility:

- Joint range, stiffness, range and limitations
- Accessory movements- glides, traction and approximation
- Mobilization of peripheral, spinal joints, techniques and grading in detail.

Re-education of muscles:

- Concept, technique, spatial and temporal summation.
- Various reduction techniques and facilitating methods.
- Progressive strengthening of various muscle groups in Grade-I-Grade IV.
- Muscle strengthening technique - PNF - Principles of PNF, indications, contra indications, techniques, limb patterns

Co-ordination:

- Balance - static and Dynamic
- Discoordination: LMNL & UMNL, cerebellar lesion, loss of kinesthetic sense (Tabes-dorsalis, leprosy, syringomyelia)
- Reeducation of balance and coordination: PNF and Frenkel's exercises.

Crutch Walking:

- Description of crutch - components, classification
- Good crutch, measurements
- Crutch use- Preparation, Training, counseling.
- Crutch gaits- types, & significance.
- Crutch complications- Palsy, dependency etc.

Hydrostatics and Hydrodynamics:

- History
- Properties of water, Specific gravity, Hydrostatic pressure
- Archimedes principle, Buoyancy-law of floatation
- Effect of buoyancy on movements performed in water

- Equilibrium of a floating body, Bernoulli's theorem
- Physiological effects of exercise in water

Hydrotherapy:

- Indication, contraindication, benefits, dangers and precautions
- Hydrotherapy regimes of exercises,
- Hydrotherapy exercise for all age groups
- Types of pools and baths

Suspension Therapy:

- Principles of suspension & types
- Components
- Effects and uses & therapeutic application
- Yogasanas and Pranayama:
- Physiology and therapeutic principles of yoga,
- Yogasana for physical culture, relaxation and medication.
- Application of yogasana in physical fitness, flexibility.
- Therapeutic application of yoga. Yoga a holistic approach

References

1. Hollis, M & Cook P.F., Practical Exercise Therapy, Blackwell, Oxford, 1999
2. Gardiner, Dena M, Principles of Exercise Therapy, CBS, New Delhi, 1999

ELECTROTHERAPY

Course/Paper: 02BPT01106

BPT YEAR-II

LOW FREQUENCY CURRENTS: Nerve
Muscle Physiology: brief outline Faradic
current:

- Indications, contraindications, Techniques, parameters, Group muscle stimulation.
 - Faradic footbath, Faradism under pressure and muscle re-education.
 - Dosimetry Galvanic current:
 - Indications, contraindications, precautions and therapeutic effects of stimulation.
 - Techniques, parameters, Dosimetry Electro-
- Diagnosis:
- S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase
 - Outline of EMG & Nerve conduction velocity Iontophoresis:
 - Definition and principles & factors
 - Indications, effects, techniques, contraindications, precautions and Potential harmful effects.

TENS therapy:

- Principle of therapy, Parameters and therapeutic uses.
- Theories of pain and pain control.
- Indications and contra-indications, Dosimetry

MEDIUM FREQUENCY CURRENTS:

Definitions, effects, indications, techniques of application, contraindications
Interferential therapy:

- Physiological, therapeutic effects & dangers, Indications & contra indications
- Technique and method of applications, Dosimetry.

THERMAL THERAPY MODALITIES:

1. Infrared Therapy:

- Therapeutic effects and uses, Techniques of application.
- Indications, contraindications precautions and Potential harmful effects.

2. Heating Modalities:

- Therapeutic effects and uses, Techniques and applications
- Indications, contraindications, precautions and Potential harmful effects of various heat modalities:

Paraffin wax bath therapy, Hydro collator packs, Whirlpool and moist heat Heating pads, Hot air chambers.

3. Cold-therapy:

- Indications, contraindications and therapeutic effects.
- Technique, precautions and Potential harmful effects of treatment, Dosimetry

HIGH FREQUENCY CURRENTS:

Short wave Diathermy: Continuous & Pulsed

- Indications, contraindications and therapeutic effects.
- Methods of application-capacitor and induction electrode, precautions and Potential harmful effects of treatment, Dosimetry.
- Microwave Diathermy:
- Characteristics and therapeutic effects.
- Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry.

ULTRASONIC THERAPY:

- Physiological and therapeutic effects & potential harmful effects.
- Indications, contraindications, methods of application and precautions, Dosimetry

ACTINOTHERAPY:

Laser:

- Introduction, effects and potential harmful effects.
- Indication, contraindications, precautions, method of application, dosimetry Ultraviolet therapy:
- Physiological and therapeutic effects- photosensitization
- Indications and contraindications and Potential harmful effects.

- Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance, Treatment / Application condition wise
- Comparison between UVR & IR Therapy

Advanced electrotherapy:

- Computerization of modalities
- Programming of parameter.
- Selection and combination of parameters.
- Combined therapy-U.S.+TENS-Principles, uses, indications etc.
- Principles of Bio-feed back, indications & uses.

Traction instruments:

Rationale, technique, indications, contraindications, precautions of electric traction equipments

References

1. FRoster A, & Palastanga,N, Clayton's Electrotherapy, Theory & Practise,AITBS Delhi, 1999

PRACTICAL PT - CLINICALS

Course/Paper: 02BPT01201

BPT YEAR-II

The student will learn - Approach to patient, collection of demographic data, art of history taking and bedside / OPD manners in relation to patient

The student will be posted in the department of Physiotherapy & he/she will do the assessment of patients visiting the department.

There will be no university examination. The students will be awarded marks on the basis of his/her attendance & performance during clinical postings in the department of Physiotherapy.

PRACTICAL EXERCISE THERAPY

Course/Paper: 02BPT01202

BPT YEAR-II

Demonstration and learning of active & passive movements of Limbs and spine
 Demonstration and practice of Manual Muscle testing, Goniometry
 Demonstration and practice of muscle stretching techniques
 Demonstration and practice of muscle strengthening techniques
 Demonstration and practice of muscle reeducation techniques
 Demonstration and practice of coordination exercises (Frankel's)
 Demonstration and practice of relaxation techniques
 Demonstration and practice of mobilization of peripheral joints
 practice of crutch gaits
 Demonstration and practice of mechanical spinal traction
 Demonstration and practice of suspension techniques

Students will be assessed by viva & practical demonstrations based upon learning in theory & practical classes.

YEAR IV

PRACTICAL ELECTROTHERAPY

Course/Paper: 02BPT01203

BPT YEAR-II

Demonstration of Electrical Modalities functioning & Usage. Demonstration and practice of various motor point stimulations. Demonstration and practice of therapeutic application of different low frequency currents. Demonstration and practice of Reaction of degeneration, SD curves plotting. Demonstration and practice of therapeutic application of the following modalities: Short-wave diathermy, Ultrasound, Infra red, Wax bath, Hydro collator, Electric muscle stimulator, Interferential currents, TENS, Ultraviolet, Microwave, Lasers, and Electrical Traction.

Students will be assessed by viva & practical demonstrations based upon learning in Theory and Practical.

YEAR III

NEUROLOGY INCLUDING PSYCHIATRY

Course/Paper: 03BPT01101

BPT YEAR-III

Nervous system: Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only) - Cerebrum, Cerebellum, Spinal Cord, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Reflexes, Communication & CSF

Clinical examination of a neurological patient,

General manifestations of nervous system disease & principles of diagnosis & management

Brief Description of Headache, migraine, raised intra-cranial pressure

Cranial Nerves and special senses with major emphasis on V, VII, X, XI, & XII

Inflammatory conditions (brief description) - meningitis (bacterial, tubercular), viral encephalitis, syphilis, rabies

Disorders of cerebral circulation - ischaemia, haemorrhages (CVA), HT encephalopathy

Demyelinating diseases (brief description) - acute disseminated encephalomyelitis, multiple sclerosis

Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, Hemi-ballismus, Spasmodic Torticollis

Convulsive disorders (brief description) - epilepsy (GM, PM, Psychomotor), tetany

Developmental and degenerative syndromes - cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy

Disorders of Spinal cord and Cauda Equina- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Neurogenic bladder and bowel

Metabolic and intoxication disorders (brief description) - Alcoholism, Drug addiction, heavy metals poisoning (lead, mercury, copper), Organo-phosphorous poisoning, electric shock, tetanus, botulism

Peripheral nerve disorders - traumatic/ compression or entrapment neuropathy, polyneuritis, GB syndrome, diabetic polyneuropathy and spinal radiculopathies. Special emphasis on brachial and lumbo-sacral plexuses and major nerves - radial, ulnar, median, femoral, and sciatic nerve

Muscle disorders - Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome

Autonomic nervous system (brief description)- clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain

Principles of psychiatric examination

Modalities of psychiatric treatment

Psychiatric illness and physical therapy link

Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -

- i. Anxiety neurosis
- ii. Depression
- iii. Obsessive compulsive neurosis
- iv. Psychosis
- v. Maniac-depressive psychosis
- vi. Drug induced psychosis
- vii. Post-traumatic stress disorder
- viii. Psychosomatic reactions: Stress and Health, theories of Stress - Illness

Link

Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses-

- Organic brain syndrome
 - Dementia
 - Drug dependence and alcoholism
- ii. Somatoform and Dissociate Disorders - conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue
 - iii. Multiple Personality & Depersonalization disorder

Child psychiatry: Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders

Geriatric Psychiatry

Mental deficiency- (descriptive)

- a. Mental retardation,
- b. Learning disabilities
- c. Autistic behavior

References

1. Bannister, R. Brain & Bannister Clinical Neurology, Oxford University Press Oxford, 2002

ORTHOPAEDICS

Course/Paper: 03BPT01102

BPT YEAR-III

Introduction to Orthopaedics: An Orthopaedic patient, history taking, clinical features, clinical examination, and investigation

Fracture healing (Normal & pathological) Calcium-phosphorus metabolism - normal and pathological states

Congenital malformations:

Brief descriptions of following congenital conditions along with the outline of treatment: Congenital Hip Displasia, Congenital Talipes Equinovarus / Calcaneovalgus, Arthrogyposis Multiplex Congenita, Congenital Torticollis, Acromelia, phocomelia, Amelia, Spina Bifida: all types, clinical presentation, sequel & management

Development diseases of skeleton: (Brief description only)

Osteogenesis imperfecta, heterotopic ossification, Osteochondritis, Perthes' disease

Neuromuscular diseases:

Volkman's Ischaemic contracture, obstetrical paralysis, and peroneal muscular atrophy

Poliomyelitis - orthopaedic aspects and treatment of deformities

Spinal deformities: clinical features, diagnosis & Conservative management of Scoliosis, Kyphosis, and traumatic deformities

Infections of Musculoskeletal system with conservative management (in brief):

- a. Bacterial infections
- b. Tubercular infections
- c. Leprosy, Pott's paraplegia

Neuro-vascular Diseases (Brief Description): orthopaedic aspects and treatment of -Nerve injuries (major nerves), Plexus injuries

Arthritis & Rheumatic Diseases: Clinical features, evaluation & conservative management of various categories of arthritis

1. Rheumatoid arthritis, Juvenile Ch. Arthritis, Reiter's disease
2. Polymyalgia rheumatica,
3. Gout,
4. Osteoarthritis,
5. Ankylosing spondylitis,
6. Neuropathic- joints, haemophilic arthropathy,
7. Avascular necrosis.

Bony & Soft tissue injuries: Injury & repair, Clinical presentation, evaluation & general principles of rehabilitation management (Brief Description)

Upper Limbs: Clinical presentation, evaluation & conservative management of rotator cuff injuries, adhesive capsulitis, bursitis, biceps tendonitis, shoulder dislocation, snapping & winged scapula, tennis and golfer elbow, olecranon bursitis, soft tissue injuries, sprains and strains, Arthritic conditions, tenosynovitis, Carpal tunnel syndrome, deformities Dupuytren's contracture, VIC, reflex sympathetic dystrophy, common fractures and dislocations
Lower Limb: Clinical presentation, evaluation and conservative management of Arthritic conditions, soft tissue injuries, sprains and strains, achilles tendonitis, bursitis, plantar fasciitis, deformities, reflex sympathetic dystrophy, neuropathic Joints, common fractures and dislocations

Spine: clinical presentation, evaluation and conservative management of - disc prolapse, cord compression, spondylosis, Ankylosing spondylosis, Spondylyolsthesis and Spinal Fractures

Amputations - Justification, outline of surgical approaches, incisions, procedures, indications, contraindications, complications & management

References

1. Joshi,J & KOtwal, P. Essentials of orthopedics & applied Physiotherapy, Elsevier, New delhi, 2004

OBSTETRICS AND GYNECOLOGY

Course/Paper: 03BPT01103

BPT YEAR-III

Brief Anatomy and physiology of female reproductive system

Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders Menstruation and its disorders

Physiological changes during pregnancy

Labour, stages of labour & delivery

Musculo-skeletal problems in an obstetric patient, management

Prenatal and post-natal care

Pelvic inflammatory diseases

Prolapse uterus, urinary incontinence, causes & management

Abortion and birth control

Tumor of the reproductive systems, management

Surgical consideration in obstetrics and gynecology

References

1. Howkins, John, Shaw's Textbook of Gynecology, Orient-Longman, Bangalore,1971

APPLIED BIO-MECHANICS & KINAESIOLOGY

Course/Paper: 03BPT01104

BPT YEAR-III

Joint structure and function

1. Types of joints
2. Joint functions

Kinesiology:

1. Origin of human movement and its significances
2. Analysis of movement - kinetics and kinematics
3. Body links and motion parts

General effects of injury and disease on joint functioning

- Brief surgical anatomy (structural components, and alignment)
- Joint range of motion, axis and plane of motion

- Joint movements, mobility and stability, restrictions and limitations, end feels
- Abnormal deviations in joints in disease and injury Of the following joint complexes:

Shoulder joint complex

Elbow joint complex

General effects of injury and disease on joint functioning

- Brief surgical anatomy (structural components, and alignment)
- Joint range of motion, axis and plane of motion
- Joint movements, mobility and stability, restrictions and limitations, end feels
- Abnormal deviations in joints in disease and injury
- Weight distribution (lower limb joints) Of the

Following joint complexes:

Wrist and hand complex

Hip joint complex

Knee joint complex:

Ankle-foot complex:

Vertebral column

Abnormal Posture:

1. Definition and description.
2. Analysis of postures (anterior, lateral and posterior), alignment of joints in postural deviations.
3. Abnormal postures - biomechanical analysis and effects.
4. Principles of Postural correction

Pathological Gait:

1. Phases of gait - biomechanical analysis.
2. Time and distance parameters - biomechanical significance.
3. Joint motion - chains of movement
4. Effects of pain, deformity, weakness in pathological gaits
5. Management of pathological gaits.

References

1. Norkin,C.C. & Levangie,P.K., Joint Structure & Function: Comprehensive, Jaypee, New Delhi. 1998
2. Magee, DavidJ, Orthopedic & Physical Assessment, Saunders Philadelphia, 2002.

PHYSIOTHERAPEUTIC IN NEUROLOGY

Course/Paper: 03BPT01105

BPT YEAR-III

Review of basic Neuro-Anatomy and Physiology

Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions

Spinal cord injury: review of anatomy and physiology

- Physiotherapy Assessment of Spinal cord injury
- Principles of Physiotherapy at various stages of Spinal cord injury
- Rehabilitation goals and ADL training

Assessment and principles of therapeutic management of following neurological conditions:

- Stroke, meningitis, encephalitis, Parkinson's disease, Cerebral palsy, Ataxia, Brain tumors
- Motor neuron disease, Disseminated sclerosis, transverse myelitis, tumors, polio, syringomyelia, spina bifida,
- Neuropathies, neuromuscular junction disorders and myopathies

Developmental physiotherapy programs, reeducation and retraining techniques in neurological conditions, approaches like: Bobath's, Rood's, PNF, Vojta techniques, biofeedback, Brunstorm, Motor relearning programming

Peripheral nerve injuries, surgical resection & repair:

- Classification & types
- Functional assessment, investigation, diagnosis & prognosis
- Physiotherapeutic management

Traumatic brain injury:

- Types and Mechanisms of head injury
- Clinical features, potential complications
- Physiotherapy principles of immediate and postoperative therapeutic management

Neurosurgery: Post surgical Physical therapy in neurosurgical procedures - craniotomy, shunts, SOL resection, surgical treatment of spasticity, cervical cord decompression

References

1. Hislop, HJ & Montgomery, J, Daniels & Worthingham's Mische. Testing Techniques of manual examination, W.B. Saunders, Philadelphia.

PHYSIOTHERAPEUTIC IN ORTHOPAEDIC

Course/Paper: 03BPT01106

BPT01 YEAR-III

Physiotherapy evaluation of an orthopaedic patient

Manipulation therapy - general assessment, indications, contra indications, brief introduction to schools of manual therapy (Maitland, Kaltenborne, Cyriax, Mulligan, Mackenzie)

Spinal stabilization, scoliosis correction

Assessment, management and treatment goals of:

- a. Osteoarthritis,
- b. Spondylosis, spondylolisthesis
- c. Proplapse intervertebral disc, LuBPT01r cord decompression
- d. Adhesive capsulitis, rotator cuff lesions of shoulder

- e. Tuberculosis of the spine, bone and major joints
- f. Avascular bony necrosis at hip joint

Assessment, management and treatment goals of:

- a. Rheumatoid arthritis
- b. Ankylosing Spondylitis
- c. Deformities: - Torticollis, thoracic outlet syndrome, CTEV, pes cavus, pes planus, Scoliosis, kyphosis, lordosis, coxa vara, genu valgum-varum-recurvatum

General principles of physiotherapy in fracture management including complications at different stages

General principles of physiotherapy in dislocations management including complications

Post fracture - assessment and PT management of: various fractures of upper limb, lower limb, and vertebral column.

Assessment and therapeutic management of: Soft tissue injuries - Sprains, strains, ligament and cartilage tear/rupture

Orthopaedic surgery: General principles of assessment, physiotherapy management in surgical conditions like - osteotomy, joint replacements, ORIF, arthodesis, Ilizarov's technique

Tendon transfers, soft tissue releases & soft tissue repair

Surgeries in C.P. & Polio

Amputation - pre & postoperative evaluation & principles of management Pre & post prosthetic assessment & principles of management

References

1. Smith, Laura, Brunstrom, Clinical, Kinesiology, JAypee, ND. 1996

PRACTICAL PT - CLINICALS

Course/Paper: 03BPT01201

BPT01 YEAR-III

Course Objective: Approach to patient, collection of demographic data, art of history taking and bedside / OPD manners in relation to patient, general assessment of patient from therapeutic point of view, reaching to provisional diagnosis, and testing of therapeutic skill learned

The student will be posted in the department of Physiotherapy & he/she will learn the assessment, diagnosis, & physiotherapy treatment of patients visiting the department.

There will be no university examination. The students will be awarded marks on the basis of his/her attendance & performance during clinical postings in the department of Physiotherapy, etc.

PRACTICAL PHYSIOTHERAPEUTIC IN NEUROLOGY

Course/Paper: 03BPT01202

BPT01 YEAR-III

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physical therapy in treatment of neurological conditions

Students will be assessed by viva & practical demonstration of application of Physical therapy based upon learning in theory.

PRACTICAL PHYSIOTHERAPEUTIC IN ORTHOPAEDIC

Course/Paper: 03BPT01203

BPT01 YEAR-III

Practical demonstration of basic principles of application of physiotherapy assessment, functional assessment and application of physical therapy treatment of orthopaedic conditions

Students will be assessed by viva & practical demonstration of application of Physical therapy based upon learning in theory.

YEAR IV

COMMUNITY REHABILITATION & DISABILITY PREVENTION

Course/Paper: 04BPT01101

BPT YEAR-IV

Introduction of Rehabilitation & History

Epidemiology of disability (Impairment, disability, phases of disability process, etc.).

Principles of Rehabilitation & concept of team approach with rolls of each individual participant.

Organization of Rehabilitation unit.

Disability prevention evaluation & principles of Rehabilitation Management.

Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration) Brief outline of Communication disorder & its implications on Rehabilitation process.

Brief outline of psychosocial & vocational aspects of Rehabilitation.

Introduction to Occupational therapy.

Activities of daily living, functional assessment & training for functional independence.

Brief outline of basic community medicine with special reference to community based Rehabilitation, infrastructure and role of CBR

Assessment of disability in rural & urban setups. Health care delivery system & preventive measures with specific reference to disabling conditions. Community education programme.

Application of Physiotherapy skills at community level with special reference to the need at rural level.

Introduction to surgical anatomy and various pathological deviations with respect to brace fitting (brief outline only).

Rationale of prescribing Prosthetic and Orthotic devices.

Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb.

Checkout, usage advice, precautions, and follow-up.

Walking aids and wheel chairs: prescription, usage advice, and follow-up.

References

1. Park, J.E., Text book of preventive & social medicine, Banarsidas, Jabalpur.1987

RESEARCH METHODOLOGY & BIO-STATISTICS

Course/Paper: 04BPT01102

BPT YEAR-IV

Definition - Statistics, Biostatistics

Applications of Biostatistics

Data collection from experiments & surveys.

Variable - Qualitative & Quantitative, Discrete and continuous.

Presentation of Data: -

a) Tabular Presentation of Data - Statistical Table, Format of a Table.

b) Frequency Distribution - construction of Frequency Distribution, cumulative and relative frequency distribution, Exclusive and inclusive method of classification of Data.

c) Diagrammatic Presentation of Data: -

Bar Diagrams, Pie Diagram, Line Diagram, Pictogram, Cartogram or Statistical map.

d) Graphical representation of a Frequency distribution - Histogram, Frequency Polygon, Frequency curve, ogives or cumulative frequency curves.

Measures of central tendency or measures of Location - Mean, Median Mode in ungrouped & grouped series. Partition Values - Quartiles, Deciles, Percentiles in ungrouped & grouped series. Graphical Determination of Median, Mode & partition values.

Measures of Dispersion or Variation - Range, Mean Deviation, Standard Deviation.

Measures of Skew ness - Pearson's and Bowley's coefficient of Skew ness.

Probability - Random experiment, sample space, events, probability of an event, addition & multiplication laws of probability, use of permutations & combinations in calculation of probabilities, random variable, probability distribution of a random variable, Binomial Distribution.

Normal Distribution & Characteristics of Normal curve.

Correlation - Bivariate distribution, scatter diagram, coefficient of correlation, calculation & interpretation of correlation coefficient.

Regression - Lines of regression, calculation of Regression coefficient.

Sampling - Methods of Sampling.

Sampling Variability & significance - Sampling Distribution, Standard error, null hypothesis, alternative hypothesis, Type I & Type II errors, tests of significance, acceptance & rejection of null hypothesis, level of significance, Z test, t test (paired & unpaired), chi-square test.

Estimation of confidence limits & intervals.

Vital Statistics

1) Rates & ratios of vital events.

2) Measures of Mortality: - Crude Death Rate, Specific Death Rate, Age Specific Death Rate, Standardized Death Rates, Infant Mortality Rate.

3) Measures of Fertility: - Crude Birth Rate, General Fertility Rate, Specific Fertility Rate, Age Specific Fertility Rate, And Total Fertility Rate.

4) Measurement of Population Growth: - Crude Rate of Natural Increase & Pearl's Vital Index, Gross Reproduction Rate, Net Reproduction Rate.

5) Measures of Morbidity: - Morbidity Incidence Rate, Morbidity Prevalence Rate.

6) Life Tables or Mortality Table.

To develop skills of critical thinking and selection of research strategy.

To acquire skills to review literature, formulate problems, research writing and publishing.

Clinical Research for physiotherapist: Why? How? And When?

Research in physiotherapy:

1. Introduction
2. Research - types, concept, definition.
3. Selection of aim and objectives.
4. Principles of methodology, analysis and report writing.

Concepts of Measurements:

1. Direct and indirect measurement variables.
2. Reliability and validity.
3. Application of physiotherapeutic tests and measurements.

Research Design:

1. Principles of designing.
2. Methods - Descriptive, Exploratory, single subject, others.
3. Design models utilized in physiotherapy.
4. Design of model for fundamental and clinical research.

Interpretation of experimental findings:

1. Collection and interpretation data theory.
2. Data review.
3. Interpretation of fundamental and clinical research.

References

1. Armstrong, H.B. , Critical Moments in Quantitative Research, Butter worth- Heine, Oxford,2001

PHYSIOTHERAPEUTIC IN GENERAL & CARDIOTHORACIC

Course/Paper: 04BPT01103

BPT YEAR-IV

Principle of post surgical physical therapy management under following:

- 1 Chest physiotherapy
- 2 Abdominal wall care
- 3 Scar management
- 4 Pelvic Floor Care

Dermatology: Physical therapy in:

Chronic Ulcers,

Leprosy (including Neuro-muscular complications)

Other dermatological conditions: Psoriasis, Vitiligo, acne, burns and skin grafting

ENT: Physiotherapy management in- Maxillary Sinusitis, otitis media, rhinorrhoea

Obs. & Gynaecology: Principles of physical therapy management in an Obs. Gynae patient:
Incontinence, Prolapse Uterus,

Pelvic Inflammatory disease, Muscular-skeletal and other problems associated with pregnancy & labour, caesarean section.

Anti natal preparatory and post natal care

Review of basic cardio-thoracic anatomy and physiology

Clinical examination including lung function tests in various pulmonary conditions

Principles of physiotherapeutic treatment in following conditions:

Bronchitis, asthma & bronchiectasis, Pulmonary embolism, tuberculosis, emphysema, pleural effusion, atelectasis, pneumothorax, haemothorax, broncho-pulmonary fistula, empyema,

Pulmonary rehabilitation - aims & objectives, principles, techniques including biofeedback. Clinical examination in cardiovascular conditions

Principles of physiotherapeutic treatment in following conditions:

CHF, MI, PDA, HT

Endocarditis, valve anomalies, congenital heart disorders, thrombosis, phlebitis, thrombosis, Thrombo angitis obliterans, varicose veins, ulcers

Cardio-thoracic trauma/surgery:

A) Principles, techniques of physical therapy management in traumatic and other surgical conditions of chest, lung, pleura, heart and mediastinum

b) Principles of chest physiotherapy in ICU & ICCU.

Physiotherapy care during bed-rest

Physiotherapy in cancer and AIDS (General principles of management)

References

1. Chemeron, M.H. Physical Agents in Rehabilitation, W.B. Saunders, London, 1999

PHYSIOTHERAPEUTIC IN SPORTS

Course/Paper: 04BPT01104

BPT01 YEAR-IV

Pre-exercise evaluation

Diet and nutrition

Measurement of fitness components and sports skills

- Measurement of muscular strength
- Measurement of muscular endurance
- Measurement of flexibility
- Determination exercise endurance

Physiological effects of exercise on body systems

- Muscular system
- Endocrine system
- Cardio-respiratory system
- Nervous system

Sports injuries

- Spine - PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction
- Hip - muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis
- Knee - menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome
- Leg & ankle - shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fasciitis, turf toe syndrome
- Head & face - maxillo-facial injuries, helmet compression syndrome

Sports injuries

- Shoulder - instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries
- Elbow - tennis elbow, golfer's elbow
- Wrist and hand - carpal tunnel syndrome, gamekeeper's thumb

Principles of injury prevention

Principles of training & Rehabilitation in sports injuries

ISports in Special age groups:

- Female athletic triad
- Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition
- Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly

References

1. Maheshwari, J. Essentials Orthopedics, Arnold, London, 2001

PRACTICAL PT - CLINICALS

Course/Paper: 04BPT01201

BPT YEAR-IV

Assessment diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills

The student will be posted in the department of Physiotherapy & he/she will learn the assessment, diagnosis, & physiotherapy treatment of patients visiting the department

There will be no university examination. The students will be awarded marks on the basis of his/her attendance & performance during clinical postings in the department of Physiotherapy, etc

PRACTICAL PHYSIOTHERAPEUTIC IN GENERAL & CARDIOTHORACIC

Course/Paper: 04BPT01202

BPT YEAR-IV

Practical demonstration of basic principles of application of physiotherapy assessment, functional assessment and application of physical therapy of general & cardio thoracic conditions

Students will be assessed by viva & practical demonstration of application of Physical therapy based upon learning in theory.

PRACTICAL PHYSIOTHERAPEUTIC IN SPORTS

Course/Paper: 04BPT01203

BPT YEAR-IV

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy

Students will be assessed by viva based upon learning in theory

PROJECT WORK

Course/Paper: 04BPT01204

BPT YEAR-IV

The student will be doing specific case studies allotted by their teacher/guide. Subject is for Case Presentations and evaluations.

Minimum 5- 10 cases are to be documented for discussion.

There will be no university examination. Students will be assessed on the basis of Viva on his/her project work and the awards so secured by them will be sent to University.

INTERNSHIP GUIDELINES (AMENDED)

1. Candidates seeking entry to the internship period must have passed all examinations in all subjects (i.e. He/She must have secured total credits of the Programme).
2. Duration: 6 months inclusive of posting in rural setup/CBR/similar setup.
3. During the internship candidate shall have to work full time average 7 hours per day (each working day) for 6 Calendar months (total Credit hours - 1260).
4. Each candidate is allowed maximum of 6 holidays during entire Internship Programme and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.

5. Assessment: The interns/candidate shall maintain the record of work, which will be verified and certified by the Head of the Department under whom he/she works. Apart from scrutiny of the record of work, the Head of the Department shall undertake assessment and evaluation of training in attendance, discipline, knowledge, skills and attitude for the duration of training. The assessment report of the candidate shall be sent to the Parent institution.
6. Based on the record of work and date of evaluation the Director/Principal shall issue 'Certificate of Satisfactory Completion' of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same.
7. In the event of unsatisfactory report, the said intern shall have to repeat the internship for the period to be decided by the Head of the Institution concerned.
8. Intern will abide by all the rules & regulations of Institution/Hospital where they are posted.
9. Intern shall be responsible for proper use of equipments of the Institute/Hospital where they are posted. He/She shall be liable to pay for damages caused to the equipments resulting from improper use by him/her.
10. Internship duration can be extended by the Principal / Director on the grounds:
 - i. Remaining absent in excess of the permitted 6 days leave period, which is due: An intern will compensate by working extra for each day leave taken.
 - ii. Unsatisfactory performance during the period: If there are unsatisfactory reports in terms of performance of the intern, submitted by the Department In-charge, the said intern shall have to repeat the internship for a period at least two months further.
 - iii. Case of indiscipline at any level: A Discipline and Action Committee will be formed in the college / Institution convened by Internship coordinator/HOD PT & headed by Director/Principal. In case of any lack of discipline, breach of trust or indulgence in any criminal activity on the part of the interns when reported by the concerned departments of Hospitals/Institutions where the interns have been posted, the defaulting Intern shall be called back immediately and subjected to disciplinary proceedings by the Disciplinary Action Committee.
 - iv. Punishments:
 - b) Suspension of Internship for a period of 3-4 weeks for the reasons to be recorded. Following this disciplinary suspension, internship can be resumed only after submission of an appropriate undertaking/guarantee/surety. Period of suspension shall be considered as Break in Internship. Disciplinary Action Committee shall decide the period of suspension and resumption of Internship for a specified period.
 - c) Rustication & Termination: In case of a serious complaint of indiscipline or breach of trust against intern or any criminal activity done by intern according to the law of the country, he/she may be rusticated along with termination of Internship.
 - d) w.e.f. Academic Session 2006-07 Hon'ble Court of Law can resume the Internship in this case only on the abrogation of criminal charges against him.
 - e) Institution shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. Following parameters / guidelines have been suggested:
 - f) It is mandatory for the Institution conducting BPT01 Programme to have its own Physiotherapy clinic fully furnished with all the necessary equipments as per the curriculum of the Programme.
 - g) The Institutes & the Hospitals should have the Physiotherapy section with all the necessary infrastructure facilities.
 - h) Senior Physiotherapist with sufficient clinical experience should manage the physiotherapy departments in the Institutes/Hospitals.

- i) Institute Director / principal can at his discretion grant NOC to the students to do the Internship at the place of his choice provided, the concerned Hospital fully satisfies the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy Services available at the place where he intend to do his Internship.