

CO2.1 -PHARMACOLOGY AND BIOCHEMISTRY

S.NO	TOPIC	OUTCOME
2.1.1	DEFINITION OF DRUG, PHARMACOKINETICS & PHARMACODYNAMICS.	➤ The topic entitles the student to understand the effects of the drug on the body and vice versa. The topic also covers the role of various drug functions, its therapeutic uses and side effects
2.1.2	BROAD CATEGORIES OF ADVERSE DRUG REACTIONS.	➤ Adverse drug reactions discusses the types of various adverse reactions that a drug may induce on the body systems.
2.1.3	ALCOHOLS.	➤ This category of drug basically discuss the Psycho-active aspects of the alcohol. It also entitles the study of Physiology and pharmacology of alcohol.
2.2.4	ANALGESICS AND ANTIPYRETICS, ANTI-INFLAMMATORY DRUGS.	➤ After the successful completion of the topic the student shall be potential enough to understand the various pharmacological agents that are helpful in pain modulation, control of inflammation and antipyretic properties.
2.1.5	SEDATIVES.	➤ This class of drugs includes the centrally acting sedatives(anxiolytics) that helps reduce anxiety and exerts a calming effect. Hypnotics & sedatives are two important categories.

2.1.5	STIMULANTS.	➤ After the successful completion of the course the students shall learn the various stimulants, its pharmacological effects and drug abuse esp. Cocaine, Methamphetamines etc.
2.1.6	DRUGS ACTING ON MUSCLES- MUSCLE RELAXANTS, MUSCLE STIMULANTS.	➤ On successful completion of the topic the student shall be understanding the locally acting muscle relaxants, their uses and side effects.
2.1.7	ANTI-PARKINSONIAN AGENTS	➤ The drugs enlisted under the category helps the student to understand the Effects of Anti-Parkinsonism agents on dopamine function and improving the quality of life for patient functions
2.1.8	ANTICOAGULANTS.	➤ After the successful completion of the topic the students shall be able to understand the role of anticoagulants. The topic also considers the effects of anticoagulants in massive surgeries and other bleeding disorders.
2.1.9	THYROXIN AND ANTI-THYROID DRUGS	➤ After the successful completion of the topic the student shall be able to understand the role of thyroxin on body metabolism and affects of Anti-thyroid drugs.
2.1.10	ANTI-DIABETICS	➤ After the successful completion of the course the students shall be capable of understanding the pathology associated with Diabetes and role of Anti-diabetic medicines.
2.1.11	GLUCOCORTICIDS	➤ On completion of the topic the student shall understand the role and function of

		Glucocorticoids, its characteristics and body functions.
2.1.12	CALCIUM, PHOSPHORUS, CALCITONIN AND PARATHORMONE.	➤ On successful completion of the topic the student shall be able to understand the varied role of important vitamins and minerals on human growth and function.
2.1.13	NARROW & BROAD SPECTRUM ANTIBIOTICS	➤ The student shall understand the role of narrow and broad spectrum antibiotics with the clinical significance of each of them. The antibiotics have been classified differently based on the function it serves.
2.1.14	ANTI-CANCER DRUGS	➤ After the successful completion of the topic the students shall be able to deal with the category of drugs used to treat Cancer.
2.1.15	DRUGS ACTING ON RESPIRATORY SYSTEMS: RESPIRATORY STIMULANTS AND RESPIRATORY DEPRESSANTS, BRONCHODILATORS, EXPECTORANTS. ANTI-ASTHMATICS, ANTI-TUSSIVE.	➤ After the successful topic completion the student shall be capable of understanding the pathology of Asthma, the role of respiratory stimulants and depressants on respiratory system.
2.1.16	VITAMINES	➤ After the completion of the topic the students shall understand the role of vitamins, its uses and clinical importance. The students shall understand the role of

		vitamins in the body systems.
2.1.17	OVERINHORMONES, ANABOLIC STEROIDS,ESTROGE M,PROGESTERONE, ANDROGEN	➤ After completion of the topic the student shall be able to understand various hormones acting on females, also the role of steroids and oestrogen and progesterone.
2.1.18	LOCALLY ACTING DRUGS: ANODIES,L OCAL ANAESTHETIC DRUGS,COUNTER- IRRITANTS RUBEFACIENT,SOO THING AGENT,ANTI- MICROBIALS	➤ After the topic completion the students may learn progressively about the local use of anaesthetics and counter irritants and rubefacients.

BIOCHEMISTRY

2.1.19	INTRODUCTION , PROPERTIES AND SIMPLE METABOLISM OF CARBOHYDRATE	<ul style="list-style-type: none"> ➤ Students must able to – ➤ Understand the introduction of carbohydrates. ➤ Understand the types of carbohydrate and their function. ➤ Understand the metabolism of carbohydrate.
2.1.20	PROTEIN AND FATS	<ul style="list-style-type: none"> ➤ after the studying Of this topic students should able to- ➤ Understand the introduction of protein and fats.
2.1.21	NUCLEIC ACID	<ul style="list-style-type: none"> ➤ Student must able to- ➤ Understand the introduction of nucleic acid. ➤ Understand the types of nucleic acid.

		<ul style="list-style-type: none"> ➤ Understand the classification and function of nucleic acid.
2.1.22	ENZYMES	<ul style="list-style-type: none"> ➤ In this topic students able to- ➤ Understand the introduction of enzymes. ➤ Understand the general properties of enzyme. ➤ Understand the function of enzymes. ➤ Understand the types of enzymes. ➤ Understand the classification of enzyme.
2.1.22	BIOENERGETICS	<ul style="list-style-type: none"> ➤ After the completion of the topic the student shall have the understanding of Plasma Membrane and laws of thermodynamics as application to biological system .also shall able to describe the Concept of free energy charge. High-energy compounds and Respiratory chain and the application .
2.1.23	GENERAL METABOLISM	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be capable of describing various metabolic processes of biochemical compounds and the energy releasing processes inside the body.
2.1.24	WATER AND ELECTROLYTE BALANCE	<ul style="list-style-type: none"> ➤ After completion of the topic the student have the understandings of fluid compartments of the body with their water and electrolyte content and balance. And the pathology of Dehydration.
2.1.25	NUTRITION	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall have the knowledge of basic nutritional requirements of the body and the appropriate caloric requirements and

		<p>the normal values. He shall be aware about balanced diet and the proper energy requirements and consumption including foods and fluids.</p>
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CO2.2PATHOLOGY AND MICROBIOLOGY

S.NO	TOPIC	OUTCOME
2.2.1	INTRODUCTION AND BRIEF HISTORY OF MICROBIOLOGY	➤ Students should be able to understand the microbiological methods, history and medically importance of microorganism
2.2.2	GENERAL CHARACTERISTICS AND CLASSIFICATION OF BACTERIA AND FUNGI	➤ Students shall be able to classify the Microorganism on the basis of their morphology & Diseases
2.2.3	MORPHOLOGY OF BACTERIA	➤ After studying this topic students would be able to know about the morphology i.e. the shape, size and the lab diagnosis i.e. collection, preparation and culture. Also what kind of infection it will cause.
2.2.4	PRINCIPLES AND METHODS OF STERILIZATION AND DISINFECTANTION	➤ Students should be understand the types of sterilization methods and their principle. And also understand the use of sterilization in Microbiology laboratory. Students should be able to know the basic principle of antiseptic and disinfectant. And also be know the differences between antiseptic and disinfectants
2.2.5	IMMUNITY	➤ Students shall be able to know General characters and nature of antigen and antibody. shall be able to know basic characters of Ag-Ab reaction and their functions.

		<ul style="list-style-type: none"> ➤ And also understand the types of reactions ➤ At the end of this topic students shall be able to know principal of Ag-Ab reaction and their interpretation of results
2.2.6	SYSTEMIC MICROBIOLOGY	
	IDENTIFICATION OF BACTERIA (STAPHYLOCOCCUS AUREUS, STREPTOCOCCI, PNEUMOCOCCUS, CORYNEBACTERIUM, ESCHERICHIA, KLEBSIELLA, ENTEROBACTER, SALMONELLA, MYCOBACTERIUM, CLOSTRIDIUM, VIBRIO, NEISSERIA, BACILLUS, PSEUDOMONAS, MYCOPLASMA, BORDETELLA, TREPONEMA, MYCOPLASMA, LEPTOSPIRA, CHLAMYDIA)	<ul style="list-style-type: none"> ➤ After the completion of this topic students able to understand to identification of various bacteria, isolate them culture recognize them for the detection of disease. Also know the morphology, culture characteristics and their source, types of diseases to infect human being
2.2.7	VIROLOGY	<ul style="list-style-type: none"> ➤ Students shall be able to know about basic salient features of viruses and aware their types of infections to infect human being. At the end of this topic students will able to know general classification of viruses on the basis of diagram and morphology.

2.2.8	MALARIA	<ul style="list-style-type: none"> ➤ Students shall be able to know how to mosquito, flies and ticks will responsible to cause diseases and also know about their prevention and vector control. ➤ And students aware their identical features Students shall be understand that what kind of different species of plasmodium to responsible for malarial infection and also know laboratory diagnosis procedure
2.2.9	APPLIED MICROBIOLOGY	<ul style="list-style-type: none"> ➤ After the completion of the topic the student shall be able to understand the micro organisms related to diseases of bone,joints and muscles and also capable of identifying organisms and tests related to it.
PATHOLOGY		
2.2.10	CONCEPT OF DISEASES	<ul style="list-style-type: none"> ➤ After the completion o the topic the student shall be able to understand the history ,concept and pathophysiology happening behind the various diseases. ➤ Also he is capable of describing the classification and types of various diseases.
2.2.11	INFLAMMATION AND REPAIR	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall have the understandings of the various inflammatory signs and the definition and causes of inflammation. ➤ Also he is capable of describing the inflammatory process and the process of healing and

		repair.
2.2.13	DEGENERATION, NECROSIS AND GANGRENES.	➤ After completion of the topic the student shall be able to understand the pathogenesis occurring behind the necrosis and gangrene and degeneration of the tissues,also he can be able to describe the procedure and the condition that can cause the degeneration ,gangrene and necrosis.
2.2.14	DEFICIENCY DISEASES	➤ After the successful completion of the topic the student shall be able to understand the normal values of vitamins and minerals, shall able to identify the deficiency diseases which are occurring due the deficiency of particular vitamins and minerals and also know the pathogenesis occurring behind the condition.
2.2.15	VASCULAR DISTURBANCES	➤ After the successful completion of the topic the student shall be able to understand the pathogenesis of all vascular disturbances and can able to define the vascular diseases along with the types and etiology.
2.2.16	BLOOD DISORDERS	➤ After completion of the course the student shall be able to identify the normal values of blood cells and the diseases occurring due to deficiency of blood and also due to over increase in blood,can be

		capable of correlating these disorders with pathogenesis of other diseases.
2.2.17	TUMORS	➤ After the successful completion of the topic the student shall be able to identify various types of tumors.th classification of the tumors and the pathogenesis behind them.
2.2.18	RESPIRSTORY DISEASES	➤ After the completion of the topic the student shall be able to identify the respiratory diseases and their definition, causes,their clinical signs and symptoms ,along with the pathogenesis. and can able to correlate with other cardio respiratory disorders.
2.2.19	CARDIO VASCULAR SYSTEM	➤ After completion of the topic the student shall be able to understand various cardiovascular diseases and their pathogenesis and correlate with the clinical signs and symptoms of other cardiovascular diseases and other respiratory diseases.
2.2.20	ALIMENTARY SYSTEM	➤ After completion of the topic the student shall be able to understand the alimentary system disorders, and can correlate the pathogenesis occurring behind the alimentary diseases with other system disorders, also they are capable of describing the ulcerative lesions of the intestine and the underlined pathology

2.2.21	LIVER AND PANCREAS	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to define the diseases associated with liver and pancreas along with their causes and can describe the pathology against the conditions.
2.2.22	URINARY SYSTEM	<ul style="list-style-type: none"> ➤ After successful completion of the topic the student shall be capable of differentiating the normal and abnormal physiology and can able to identify the pathology behind the urinary disease.
2.2.23	ENDOCRINE AND SALIVARY GLANDS	<ul style="list-style-type: none"> ➤ After the successful completion of the topic the student shall be able to understand the endocrine gland disorders and can correlate the path-physiology of the various disorder, also they shall have the understanding of various salivary gland tumors and their pathology and types.
2.2.24	CENTRAL NERVOUS SYSTEM DISORDERS	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to define Meningitis and Encephalitis, brief outline of C.N.S. Tumours and peripheral nerve lesions and can correlate pathology behind them.
2.2.24	BONE AND JOINTS	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to define Osteomyelitis, Osteoarthritis, Septic, Arthritis, Gout, Rheumatic Arthritis and

		<p>Bone Tumours.</p> <ul style="list-style-type: none"> ➤ And shall able to describe the definition of the said disorders and the pathogenesis behind them.
2.2.26	MUSCLES	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to understand the pathology ,definition and causes of the diseases like – Poliomyelitis, Myopathies, Volkman’s ischemic contracture and can correlate the management with physiotherapy procedures,
2.2.27	SKIN	<ul style="list-style-type: none"> ➤ After the completion of the topic the student shall be capable of describing the definition of skin and related disorders and can correlate the pathogenesis behind th said topics like Scleroderma, Psoriasis, Autoimmune disorders.

CO2.3-GENERAL
SURGERY,ENT,OPHTHALMOLOGY,ENT,OBS AND GYNAE

S.NO	TOPIC	➤ OUTCOME
	GENERAL SURGERY	
2.3.1	INTRODUCTION	➤ After completion of the topic the student shall be able to understand the procedure under general anaesthesia,blood transfusion,physiologic responses during surgery and after anaesthesia.
2.3.2	WOUNDS	➤ After the completion of the topic the student shall be able to understand the basic knowledge about the wounds scars and the ulcers , the related causes and treatment.
2.3.3	PRINCIPLES OF PRE AND POST – OPERATIVE PHYSICAL EXAMINATION, INVESTIGATIONS , POSTOPERATIVE COMPLICATIONS AND THEIR MANAGEMENT	➤ After completion of the topic the student shall be able to understand and can describe the Principles of pre and post –operative physical examination, investigations, postoperative complications and their management
2.3.4	ABDOMINAL SURGERY	➤ After completion of the topic the student shall have the knowledge of type of anesthesia, Incisions, techniques, pre and post operative requisites and management of following abdominal surgeries Nephrectomy, Appendectomy, Herniorrhaphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, ileostomy, Incisional hernia and its prevention

2.3.5	BURNS	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to define Causes, Classification, Medical & surgical management and precautions in the acute stage, complications of burns and their management. ➤
2.3.6	- PLASTIC SURGERY:	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall have the understandings about Principles of plastic surgery, post – operative management and complications. <ul style="list-style-type: none"> • Cineplasty, Z-plasty. ➤ Principles of cosmetic surgery. ➤ Skin grafting. ➤ Surgery of Hand with emphasis on management of traumatic & leprosy hand. ➤ Burns and plastic surgery management
2.3.7	OPHTHALMOLOGY	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall have the understandings of various ophthalmic diseases and can describe: Etiology, symptomatology and treatment of visual defects emphasis on Errors of

		Refraction, Squint, Conjunctivitis, Trachoma, Corneal ulcers, Iritis, Cataract, Retinitis,
2.3.8	ENT	<p>➤ AFTER the completion of the topic the student shall have the understandings of various ENT disorders and can describe the Aetiology, symptomatology and treatment of sinusitis, Rhinitis, Acute and Chronic Otitis, Otosclerosis, Mastoidectomy, loss of hearing and facial palsy.</p>
2.3.9	OBSTETRICS AND GYNAE	<p>➤ After the completion of the said topics the student shall be able to describe the various obs and gynae conditions, also have the knowledge of anatomy and physiology of female reproductive system,</p> <ul style="list-style-type: none"> ▪ Principles of clinical examination, investigation, diagnosis and prognosis in female reproductive and system disorders. ▪ Menstruation and disorders of menstruation. ▪ Labour, stage of labour, normal and abnormal

		<p>labour and management of neonate.</p> <ul style="list-style-type: none">▪ Physiological changes during pregnancy.▪ Antenatal care and diagnosis of pregnancy including high-risk pregnancy.▪ Puerperium & postnatal care, social obstetrics-maternal & perinatal mortality.▪ Pelvic pain and its management.▪ Importance Gynaecological condition, a short review of PID, Tumors, malignancies, infertility, Endometriosis, Ectopic pregnancy, Vesicular mole. Prolapse Uterus
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CO2.4-GENERAL MEDICINE

S.NO	TOPIC	COURSE OBJECTIVE
2.4.1	INFECTIONS	<ul style="list-style-type: none">➤ Objective of the course is student at the end of this course should have a broad understanding of various infections ,bacterial (tetanus ,typhoid),viral (herpes simplex ,herpes zoster,measles,hepatitis'hiv) ,protozoal (filariasis ,malaria,amebiasis)➤ Student must have a brief knowledge about aetiology,pathology,type and degree of disability patient will have as a result of disease so that he/she as a physiotherapist would be able to help the patient along with physiotherapist.
2.4.2	DISEASES OF BLOOD	<ul style="list-style-type: none">➤ The student at the end of this course should have a broad knowledge of blood diseases like nutritional anemia ,bleeding disorders ,leukaemia ,lymphadenopathy and splenomegaly .➤ The student must be able to define and describe all the clinical aspects of these diseases .
2.4.3	DISEASES OF LIVER	<ul style="list-style-type: none">➤ The student at the end of this course must have a broad knowledge of diseases of liver like jaundice ,liver cirrhosis etc .➤ The student must be well versed with various clinical aspects of the diseases like its aetiology ,pathology,complications ,prognosis and management of the diseases .
2.4.4	RENAL DISEASES	<ul style="list-style-type: none">➤ The student at the end of this topic must have broad understanding about various renal diseases like acute and chronic renal failure ,urinary tract infection,acute

		<p>nephritis ,nephrotic syndrome .</p> <ul style="list-style-type: none"> ➤ Student must have brief idea about aetiology ,pathology ,associated complications,diagnostic tests and management of the diseases .
2.4.5	GIT DISEASES	<ul style="list-style-type: none"> ➤ Student at the end of this course should have a broad knowledge about various gastro intestinal diseases like peptic and gastric ulcer ,diarrhoea and dysentery. ➤ Student must be aware about aetiology ,pathology,symptoms and brief management of the above diseases.
2.4.6	NUTRITIONAL AND METABOLIC DISEASES	<ul style="list-style-type: none"> ➤ Student at the end of the topic must have broad knowledge about various aspects of nutrition and metabolism associated diseases like balanced and normal diet ,avitaminosis of both fat and water soluble vitamins ,diabetes mellitus ,obesity ,hypo and hyper thyroidism ,calcium homeostasis etc . ➤ The student must have a thorough knowledge of definitions ,classifications and complications and management of the above diseases .so that he/she as a physiotherapist should be able to correlate and help in management of the diseases.
2.4.7	DISEASES OF BONES ,JOINTS AND CONNECTIVE TISSUES	<ul style="list-style-type: none"> ➤ The student at the end of topic must have a broad knowledge about various musculoskeletal diseases like AS ,polyarthritis nodosa,systemic lupus erythematosus,rheumatic arthritis ,rheumatic fever ,osteo arthritis . ➤ Student must have a broad understanding of aetiopathogenesis ,clinical features ,diagnosis ,complications and management of the above diseases .

		<ul style="list-style-type: none"> ➤ Student must be able to correlate the pathologies for better understanding of physical medicine and physiotherapeutic interventions in above conditions .
2.4.8	GENETICS AND DISEASES	<ul style="list-style-type: none"> ➤ The student at the end of this topic must have a broad understanding of common inherited disorders as well as prevention of those diseases . ➤ The student will be able to understand and implement this knowledge in his / her routine physical therapy practice.
2.4.9	GERIATRICS	<ul style="list-style-type: none"> ➤ The student at the end of this topic will have a broad knowledge of various geriatric disorders . ➤ The knowledge gained from the topic will enable the student to understand all the geriatric related problems so that he / she can deal with geriatric populations with utmost care and responsibility .

CO2.5-CLINICAL ORTHOPAEDICS

S.NO	TOPIC	OUTCOME
2.5.1	INTRODUCTION TO ORTHOPEDICS	<ul style="list-style-type: none">➤ After the completion of the topic student will have complete knowledge about :➤ Terminology related to orthopaedics types of common orthopaedics ,clinical examination common investigation as well as management both operative and non operative conditions .
2.5.2	PRINCIPLES OF OPERATIVE MANAGEMENT :	<ul style="list-style-type: none">➤ After the completion of the topic student will be aware of orthopaedic surgical procedures like osteotomy, arthrodesis ,spinal stabilisation procedures ,tendon operations arthroscopy, total joint replacement and limb re -attachment .➤ The student will be able to correlate and implement the physiotherapeutic intervention and successful rehab in pre as well as post operative stages of the surgical procedure .
2.5.3	FRACTURES AND DISLOCATION	<ul style="list-style-type: none">➤ After the completion of the topic student will be aware of all types of fractures and dislocations sign and symptoms of all the above injuries and their principle of management and complications both medically and physiotherapeutically.
2.5.4	AMPUTATIONS :	<ul style="list-style-type: none">➤ After the completion of the topic the student will have complete knowledge

		<p>about the types ,classification , principles and procedures of amputations .</p> <ul style="list-style-type: none"> ➤ The student will be able to implement the knowledge in clinical postings as well as in understanding and correlating the topic while studying rehab procedures in preceding years .
2.5.5	BONE AND JOINT INFECTIONS :	<ul style="list-style-type: none"> ➤ After the completion of the course the student will be able to understand aetiology ,clinical features ,management bas well as complication of infectious conditions like septic arthritis ,osteomyelitis ,tuberculosis of bones and joints ,leprosy etc . ➤ The student can implement the above knowledge by correlating these facts in postings ,understanding diagnostic decision making and physiotherapeutic involvement in such conditions
2.5.6	BONE AND JOINT TUMOURS	<ul style="list-style-type: none"> ➤ After the completion of the topic the student will be able to classify and identify clinical features as well as symptomology of bony lesions like osteomas ,osteosarcoma ,osteoclastoma ,ewings tumour ,multiple myeloma and secondaries . ➤ Student will be able to correlate the knowledge in clinical postings ,better understanding of rehabilitative procedures and ultimately in clinical decision making and routine screening .
2.5.7	CONGENITAL	

	<p style="text-align: center;">ANAMOLIES AND DEFORMITIES</p>	<ul style="list-style-type: none"> ➤ The student will be aware of salient features of congenital and acquired deformities like cdh ,ctev ,scoliosis , kyphosis etc . ➤ The student will be able to assess and observe these deformities .as well as understand the faulty biomechanics leading to them . ➤ Student will be aware of the operative procedures ,prescriptive orthotics and splints to cure these deformities .
<p>2.5.8</p>	<p style="text-align: center;">LOW BACK ACHE</p>	<ul style="list-style-type: none"> ➤ After the completion of the topic the student shall be aware of all the possible causes of back pain ,its screening processes ,altered bio mechanics and pathophysiology and radiological appearance . ➤ The student will be able to implement the knowledge in identifying underlying causes ,diagonostic tests as well as management of low back pain .
<p>2.5.9</p>	<p style="text-align: center;">TENNIS ELBOW</p>	<ul style="list-style-type: none"> ➤ After the completion of course the student will have knowledge about the definition ,causes,faulty biomechanics as well as diagnostic procedure of the condition . ➤ The student should be aware of medical surgical and physiotherapeutic

		management of the condition as well must be able to correlate the following in physio practise .
2.5.10	POLIOMYELITIS. :	<ul style="list-style-type: none"> ➤ After the completion of the topic student shall be aware of causes , mode of transmission ,symptomology,prognosis and medical management of poliomyelitis. ➤ The student shall be able to assess post paralytic residual paralysis and its deformities . ➤ Student must be aware of all the corrective surgical procedures and prescriptive saints and orthotics for the same .
2.5.11	CARPEL TUNNEL SYNDROME	<ul style="list-style-type: none"> ➤ After the completion of the topic student shall be able to diagnose the condition with complete knowledge of signs and symptoms ,diagnostic tests ,and clinical features of the condition . ➤ The student shall implement the knowledge in implementing the knowledge in assessing and treating the condition .
2.5.12	SPRAINS AND STRAINS	<ul style="list-style-type: none"> ➤ After the completion of the topic the student will be able to differentiate sprains and strains and will be aware of the causative trauma ,types of sprains and strains its classification, symptoms ,special tests and immediate and long term management of the above

		conditions . The student shall be able to implement the above knowledge in assessing and examining above conditions
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CO2.6 EXERCISE THERAPY

S.NO	TOPIC	OUTCOME
2.6.1	INTRODUCTION TO EXERCISE THERAPY	➤ The student shall understand the basic concept of exercise therapy principles which is the most important root part of the physical medicine ie physiotherapy
2.6.2	EXERCISE AND PHYSIOLOGY OF THE BODY	➤ After completion of the topic the student shall able to understand the applied part of biomechanical modalities, biomechanics and anatomy and physiology of the human body for the therapeutic purposes.
2.6.3	PSYCHOGENIC ASPECTS OF EXERCISE	➤ After completion of the topic the student shall be able to understand the psycholical aspects of exercise ie how to motivate the patient and how to counsel the patient for exercise.
2.6.4	PHARMACOLOGICAL ASPECTS OF EXERCISE	➤ After the completion of the topic the student shall have the understanding of the various drug interacrions with the exercise and their effects on various systems of the bady including CNS during exercise.
2.6.5	STARTING POSITIONS	➤ After studying this topic student must able to learn the following things :- Definition of starting position Types of starting position Standing Kneeling Sitting Lying Hanging Ideal positions for standing, kneeling, sitting, lying, hanging Muscle workdone in each positions Uses and effects of each positions Derived positions from the starting positions
2.6.6	CLASSIFICATION OF MOVEMENT IN DETAIL	➤

2.6.7	ACTIVE VOLUNTARY MOVEMENTS, INVOLUNTARY MOVEMENTS, PASSIVE MOVEMENTS	<ul style="list-style-type: none"> ➤ Students shall be able to identify various active and passive movements, principles, its effect on human body
2.6.8	ASSISTED EXERCISES	<ul style="list-style-type: none"> ➤ Students shall be able to understand the principle of assisted exercise its effects on various systems
2.6.9	FREE EXERCISE	<ul style="list-style-type: none"> ➤ Student shall be able to understand the effects of free exercise on human body
2.6.10	RESISTED EXERCISES	<ul style="list-style-type: none"> ➤ Student shall be able to ➤ Define ➤ Effects of exercise ➤ Physiological effects ➤ Technique ➤ Principles ➤ Methods
2.6.11	PASSIVE STRETCHING	<ul style="list-style-type: none"> ➤ Students shall be able to understand the purpose of the stretching its physiological effects, indication and contraindication
2.6.12	MUSCLE STRENGTH	<ul style="list-style-type: none"> ➤ Should be able to understand ➤ physiology of muscle ➤ pathology

		<ul style="list-style-type: none"> ➤ neurogenic aspects ➤ indication/ contraindication
2.6.13	JOINT MOVEMENT	<ul style="list-style-type: none"> ➤ Students shall be able to understand the normal ROM, various osteokinematics and arthrokinematics, end field, effects of mobilization and exercises to improve joint ROM
2.6.14	RELAXATION	<ul style="list-style-type: none"> ➤ After completion of the topic students shall be able to understand the effects of relaxation and various relaxation technique
2.6.15	POSTURE	<ul style="list-style-type: none"> ➤ Students shall, be able to understand normal posture there deviations pathology and effect on changes in biomechanics and effects on degenerative process of body
2.6.16	FUNCTIONAL RE-EDUCATION EXERCISES	<ul style="list-style-type: none"> ➤ After completion of the topic students shall be able to teach patients about functional re-education exercise in term of rehabilitation of patient
2.6.17	SUSPENSION THERAPY	<ul style="list-style-type: none"> ➤ Students shall be able be understand the principle of suspension therapy
2.6.18	RELAXATION	<ul style="list-style-type: none"> ➤ Students shall be able to understand ➤ relaxation techniques, its effect on CNS and neuromuscular system ➤ various positions
2.6.19	BREATHING	<ul style="list-style-type: none"> ➤ Students shall be able to demonstrate

	EXERCISES	breathing exercise & shall be able to understand principle, effects & uses of it
2.6.20	POSTURE	<ul style="list-style-type: none"> ➤ After the successful completion of topic students shall understand the normal posture and its deviation in AP and lateral aspect ➤ Shall be able to identify musculoskeletal structure involved in it
2.6.21	YOGA	<ul style="list-style-type: none"> ➤ After successful completion of the topic the student shall understand the holistic approach of yoga and help patient to get physical as well as mental social and spiritual well being. understand the basic yoga concept of ashtang yog ,pranayams and therapeutic yogasnas,relaxation kriyas and mudras etc.
2.6.22	MASSAGE	<ul style="list-style-type: none"> ➤ After completion of the topic the student shall be able to understand the principles of massage therapy various massage ,petrissage,relaxing and soft tissue mobilisation techniques for various clinical conditions.
2.6.23	FUNCTIONAL RE-EDUCATION	<ul style="list-style-type: none"> ➤ Students shall be able to define Functional Re-education exercises, need of patient, and to identify muscle group to be trained
2.6.24	HYDROTHERAPY	<ul style="list-style-type: none"> ➤ Students shall be able to understand the principle of Hydrotherapy and law of floatation, ➤ Shall be able to develop effective treatment program for various conditions
2.6.25	ISOMETRIC EXERCISE, ISOTONIC AND	<ul style="list-style-type: none"> ➤ After the successful completion of topic student shall be able to ➤ identify different type of muscle work

	ISOKINETIC EXERCISE	<ul style="list-style-type: none"> ➤ basic physiology of muscle activity associated with exercise ➤ effect of all three type of exercises on muscle tissue ➤ uses of exercise in development of effective exercise protocol depending on pathology & need of patients
2.6.26	EVALUATION AND EXERCISES FOR SHOULDER ELBOW WRIST HIP KNEE ANKLE	<ul style="list-style-type: none"> ➤ Students shall be able to evaluate the joint, Joint ROM, End Feels, normal physiological movements, osteokinetic, arthrokinematics ➤ Shall be able to evaluate any abnormal movements of joint ➤ Shall be able to develop exercise protocol
2.6.27	SPINAL EXERCISE	<ul style="list-style-type: none"> ➤ After the successful completion of the topic students shall be able to assess the strength of the muscle, weakness, normal tone, postural alignment ➤ Shall be able to develop effective exercise regime without overloading the vertebral Column and its content
2.6.28	GAIT ANALYSIS	<ul style="list-style-type: none"> ➤ Students shall be able to understand

		normal parameters of gait & its components
2.6.29	PATHOLOGICAL GAITS.	<ul style="list-style-type: none"> ➤ Students shall be capable of identify different pathological gaits & associated pathology
2.6.30	GAIT TRAINING	<ul style="list-style-type: none"> ➤ Students shall be able to teach normal gait pattern to the patients with its significant parameters
2.6.31	WALKING AIDS AND CRUTCH WALKING	<ul style="list-style-type: none"> ➤ Students shall be able to understand the uses of various walking aids. ➤ Shall be able to teach technique of assistive gait to patients
2.6.32	TYPES OF PARAPLEGIC GAITS	<ul style="list-style-type: none"> ➤ Students shall be able to assess various Types of paraplegic gaits and its training
2.6.33	OEDEMA	<ul style="list-style-type: none"> ➤ Students shall be capable of understanding the pathology of oedema, its type, and effect of exercise, compression and massage.
2.6.34	TRACTION	<ul style="list-style-type: none"> ➤ After the successful completion of topic students shall be able to understand different modes of traction, principle, indication and contraindication
2.6.35	GROUP THERAPY	<ul style="list-style-type: none"> ➤ Students shall be able to understand uses, indication and contraindication of it.

2.6.36	THERAPEUTIC GYMNASIUM.	➤ Students shall have understanding of gym uses for therapeutic purpose.
2.6.37	ENDURANCE TRAINING	➤ Students shall be able to understand effects of endurance exercise
2.6.38	GONIOMETRY	➤ Students shall be able to assess the normal joint ROM its abnormalities

CO2.7 –ELECTROTHERAPY

S.NO	TOPIC	OUTCOME
2.7.1	NERVE MUSCLE PHYSIOLOGY	<ul style="list-style-type: none">➤ Student shall understand the physiology of impulse conduction from nerve to muscle through neuromuscular junction and the relevant anatomy➤ Shall be able to understand the effect of external impulse on nerve in respect to cathode and anode
2.7.2	FARADIC CURRENT.	<ul style="list-style-type: none">➤ Students shall be able to➤ Define the current➤ Production➤ Modulation of current➤ Therapeutic uses➤ Physiological effects➤ Placement➤ Contraindications➤ Shall be able to use faradic currents for electrical stimulation
2.7.3	GALVANIC CURRENT	<ul style="list-style-type: none">➤ After the successful completion of topic students shall be able to stimulate muscle using Galvanic current for the neurological and neuromuscular disorders➤ Should be able to understand :

		<ul style="list-style-type: none"> ➤ Therapeutic effects ➤ Physiological effect ➤ Indication & contraindication ➤ Dangers
	ELECTRO-DIAGNOSIS	<ul style="list-style-type: none"> ➤ Students shall be able to perform diagnostic test based on nerve conduction, response time , strength of contraction ➤ Shall be able to identify pathology associated with abnormal muscle response
	IONTOPHORESIS	<ul style="list-style-type: none"> ➤ After successful completion of the topic students shall be able to ➤ Define ➤ Understand Principle ➤ Physiological and therapeutic effects ➤ Contraindication & dangers ➤ Shall be able to apply Iontophoresis on in clinical setup
2.7.4	TENS	<ul style="list-style-type: none"> ➤ Students shall be able to understand the pain gate theory, modulation of pain, therapeutic effects, technique of application, indication and contraindications and its clinical implementation
2.7.5	CURRENTS AND ELECTROMAGN	

	ETIC RADIATIONS.	
	MEDIUM FREQUENCY CURRENT (INTERFERENTIAL CURRENT)	<ul style="list-style-type: none"> ➤ After the successful completion of the topic students shall be able to understand production of Interferential Current, principle of pain modulation its therapeutic and physiological effect ➤ Shall understand indication and contraindication in clinical setup
	HIGH FREQUENCY CURRENT	<ul style="list-style-type: none"> ➤ After the successful completion of topic students shall understand the production of short wave, long Wave & Micro wave. ➤ Physiological effects of heat ➤ Vasodilatation ➤ Methods of application & technique ➤ Uses ➤ Contraindication ➤ Practical implementation
	ULTRAVIOLET RADIATION	<ul style="list-style-type: none"> ➤ Shall be able to understand ➤ production of UVR ➤ calculation of doses ➤ physiological effects ➤ indication / contraindications
	INFRA RED	<ul style="list-style-type: none"> ➤ Students shall be able to understand

		luminous and non luminous IRR production, depth of penetration, effect on tissue and clinical significance
	ULTRASONIC THERAPY	<ul style="list-style-type: none"> ➤ After the completion of the topic students shall be able to understand production of ultrasound, pezolectical effect, transmission of waves in tissue, physiological effects, indication and contraindications ➤ Student shall be able to test the equipment
	OTHER HEATING MODALITIES	<ul style="list-style-type: none"> ➤ Students shall be able to understand the physiological effects of heat on tissue and metabolic change related to it
	CRYO THERAPY	<ul style="list-style-type: none"> ➤ After successful competition of topic students shall be able to understand the effect of ICE on tissue, changes in metabolism, rebound phenomena, and various methods of cryotherapy
	BIO FEEDBACK	<ul style="list-style-type: none"> ➤ Students shall be able to understand the principle of Bio Feedback its application and therapeutic uses