

Vocational Higher Secondary
Education (VHSE)

Second Year

PHYSIOTHERAPY

Reference Book - Teachers' Version



Government of Kerala
Department of Education

State Council of Educational Research and Training (SCERT),
KERALA
2016

Foreword

Dear Teachers

This reference book (**Teachers' Version**) is intended to serve as a transactional aid to facilitate classroom transaction and as a ready reference for teachers of Vocational Higher Secondary Schools. It offers some guidelines for the transaction of the course content and for undertaking the practical work listed in the course content. As the curriculum is activity based, process oriented and rooted in constructivism focusing on the realisation of learning outcomes, it demands higher level proficiency and dedication on the part of teachers for effective transaction.

In the context of the Right- based approach, quality education has to be ensured for all learners. The learner community of Vocational Higher Secondary Education in Kerala should be empowered by providing them with the best education that strengthens their competences to become innovative entrepreneurs who contribute to the knowledge society. The change of course names, modular approach adopted for the organisation of course content, work-based pedagogy and the outcome focused assessment approach paved the way for achieving the vision of Vocational Higher Secondary Education in Kerala. The revised curriculum helps to equip the learners with multiple skills matching technological advancements and to produce skilled workforce for meeting the demands of the emerging industries and service sectors with national and global orientation. The revised curriculum attempts to enhance knowledge, skills and attitudes by giving higher priority and space for the learners to make discussions in small groups, and activities requiring hands-on experience.

The SCERT appreciates the hard work and sincere co-operation of the contributors of this book that includes subject experts, industrialists and the teachers of Vocational Higher Secondary Schools. The development of the teachers' version of reference books has been a joint venture of the State Council of Educational Research and Training (SCERT) and the Directorate of Vocational Higher Secondary Education.

The SCERT welcomes constructive criticism and creative suggestions for the improvement of the book.

With regards,

Dr. J. Prasad
Director
SCERT, Kerala

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5. ABOUT THE COURSE

Vocational Higher Secondary Education is a project of central government to address the issues of unemployment. In Vocational Higher Secondary students are guided to different work stream after their two year course. Among the different vocational courses introduced, physiotherapy has great relevance.

In history it has its roots in the after effects of Second World War-in the rehabilitation after injuries .It gradually developed in to a separate branch of medicine. In the past, medical and surgical care was directed only towards the treatment of diseases. Now it is well recognized that attention needs to be paid also towards the after effects of diseases. It is widely accepted that by using physiotherapy treatment techniques and facilities recovery of a patient can be accelerated and the period of convalescence can be reduced and in certain cases permanent disability resulting from disease can be prevented or minimized. “A Physician add life to years and a Physiotherapist add years to life”. This new concept has been the key factor to the development of a new branch of medicine i.e. rehabilitation medicine. Today physiotherapy has emerged as a popular branch of Allied Health science. Its progress and rapid expansion had made it a chief component of Rehabilitation medicine. It has also a major role in sports medicine and physical fitness.

Vocational higher secondary course in Physiotherapy will enable the students to acquire various skills needed to assist a Physiotherapist in the different specialties. It also offers an opportunity for higher studies in various medical, paramedical and allied health science courses.

6. Job roles

GOVT/SEMI GOVT SECTOR	PRIVATE SECTOR	SELF EMPLOYMENT
1. Lab Technical Assistant 2. Hospital Assistant	1. Physiotherapist's assistant 2. Rehabilitation assistant 3. Gymnasium instructor 4. Fitness trainer 5. Community health worker 6. Assistant in special school 7. Assistant in Geriatric care center 8. Assistant in physiotherapy clinic 9. Health educator	1. Gymnasium instructor 2. Fitness trainer 3. Entrepreneur in fitness center 4. Entrepreneur in wellness center 5. Production of exercise therapy appliances.

7. Major skills (with Sub-skills)

Module - 3

Major skill

Learner will be able to assist in electro and exercise therapy treatment

Sub skill

Learner will be able to

1. Give general instructions to the clients prior to treatment.
2. Prepare the patient for treatment

3. Arrange the treatment set up
4. Checking ,cleaning and maintenance of physiotherapy equipments
5. Assist the physiotherapist in providing treatment

Module -4

Major skills

Learner will be able to assist in the treatment of physiotherapist in various conditions/ specialities

Sub skill

Learner will be able to do

1. Therapeutic movements
2. Therapeutic positioning
3. Transfer technique
4. Resisted exercise
5. Frenkel's exercise
6. Relaxation techniques
7. Stretching exercise
8. Mobility exercise
9. Strengthening exercise
10. Donning and doffing of orthotics

8. LEARNING OUTCOMES OF THE COURSE

- Assist the physiotherapist to do passive movement
- Assist the physiotherapist to do active exercises
- Do manual muscle testing of major muscles
- Check range of motion of major joints
- Assist the physiotherapist in mobilising orthopaedic patients.

- Prepare and maintain suspension therapy unit
- Prepare the patients and manage safety precautions in hydrotherapy.
- Prepare electrotherapy equipments and patients for treatment.
- Prepare the patient for postural drainage
- Demonstrate the breathing exercise to the client
- Assist the physiotherapist in management of Hemiplegic patients
- Assist the physiotherapist in management of paraplegic patients
- Assist the physiotherapist in management of Parkinson patients
- Assist the physiotherapist in management of cerebral palsied child
- Assist the physiotherapist in management of Ataxia
- Use the orthotics and prosthetic in various deformities
- Able to assist in fracture management
- Able to assist the physiotherapist in management of various arthritic conditions
- Able to assist in gait training
- Able to assist in physiotherapy care of amputee patient
- Able to assist in geriatric care

9. COURSE STRUCTURE

This course will consists of 4 modules

Module No	Module Name	No of periods
MODULE 1	BASICS OF HUMAN ANATOMY AND	340

		PHYSIOLOGY	
MODULE	2	BASICS OF SPORTS AND PHYSICAL FITNESS	340
MODULE	3	FUNDAMENTALS OF PHYSIOTHERAPEUTICS	340
MODULE	4	APPLICATIONS OF PHYSIOTHERAPY IN VARIOUS CONDITIONS/ SPECIALTIES	340

10. Syllabus and list of practicals

MODULE-3

FUNDAMENTALS OF PHYSIOTHERAPUTICS

UNIT-3.1 .INTRODUCTION TO PHYSIOTHERAPY

- Definition
- Branches of physiotherapy
- Scope of physiotherapy
- General goals of physiotherapy

UNIT-3.2. EXERCISE THERAPY

UNIT-3.2.1.INTRODUCTION TO EXERCISE THERAPY

UNIT-3. 2.2 MOVEMENT AND TYPES OF MOVEMENTS

1. Active movement

- Free exercise

- Assisted exercise
- Assisted-resisted exercise
- Resisted exercise

2. Passive movement

3. Reflex movements

UNIT 3.2.3 FUNDAMENTAL POSITIONS

- Standing
- kneeling,
- sitting
- lying
- hanging

UNIT3. 2.4 DERIVED POSITIONS

- Standing
- kneeling,
- sitting
- lying
- hanging

UNIT3. 2.5 MANUAL MUSCLE TEST OF MAJOR MUSCLE GROUP

- Shoulder-flexors ,extensors, abductors and adductors
- Elbow-flexors and extensors
- Hip-flexors ,extensors, abductors and adductors
- Knee-flexors and extensors

UNIT 3.2.6 RANGE OF JOINT MOTION OF MAJOR JOINTS

- Shoulder-flexion ,extension, abduction and adduction
- Elbow-flexion and extension

- Hip-flexion ,extension, abduction and adduction
- Knee-flexion and extension

UNIT 3. 2.7 POSTURE

Definition and Types (Good and Bad posture)

UNIT-3. 2.8 EXERCISE THERAPY EQUIPMENTS

- Suspension unit
- Static cycle
- Treadmill
- Quadriceps table
- Shoulder wheel
- Hand exerciser
- Medicine ball,
- Swiss ball
- Abduction ladder.
- Parallel bar
- Tilt table
- Wheelchair
- Crutches

UNIT-3.3 HUMAN LOCOMOTION (GAIT)

UNIT-3.3.1 Definition and Gait cycle

UNIT-3.3.2 Pathological gait

- Circumductory gait
- Scissoring gait
- Festinant gait
- Ataxic gait

- High stepping gait
- Antalgic gait

UNIT 3.3.3 Gait training

UNIT3. 3.4 Transfer techniques

- Wheel chair to bed
- Bed to wheelchair

UNIT-3.4 HYDROTHERAPY,

- Pooltherapy
- Contrast bath
- Cryotherapy

UNIT-3.5 SUSPENSION THERAPY

Types and indication

UNIT-3.6 RELAXATION

- Definition, types and techniques

UNIT-3.7 CHEST PHYSIOTHERAPY

- Postural drainage
- Breathing exercise

UNIT-3.8 ELECTROTHERAPY

UNIT 3.8.1 Introduction of electrotherapy

UNIT 3.8.2 Classification -low frequency, medium frequency and high frequency equipments

UNIT 3.8.3 Preparation and safety measures for patient and equipments

UNIT3. 8.4 Thermotherapy

- Physiological and Therapeutic effects of heat.
- Application of heating modality
- Indication and contraindication of the electrotherapy equipments.

UNIT 8.5 Brief descriptions of electrotherapy equipments-

- IRR-Infra red radiation
- US-Ultra sound
- SWD-Short Wave Diathermy
- IFT-Interferential therapy
- TENS-Transcutaneous Electrical Nerve Stimulator
- COLD PACK
- HOT PACK
- WAX BATH
- LASER

2. List of practicals

1. Free exercise
2. Resisted exercise
3. Passive movements
4. Fundamental position
5. Derived position
6. Grading of muscle power of major muscles
7. Range of motion of major joints
8. Good and bad posture

Preparation and maintenance of exercise therapy equipment

9. Static cycle
10. Treadmill
11. Quadriceps table
12. Shoulder wheel

13.Hand exerciser

14.Medicine ball,

15.Swiss ball

16.Abduction ladder.

Demonstration of pathological gait

17.circumductory gait

18.Scissoring gait

19.Festinent gait

20.Ataxic gait

21.High stepping gait

Demonstration of gait training

22.Transfer techniques

23.Cryo therapy

24.Contrast bath

25.Relaxation

26.Breathing exercise

Preparation and application of electro therapy modalities

27.IRR

28.SWD

29.ULTRASOUND

30.IFT

31.TENS

32.EMS

NAME OF MODULE: APPLICATIONS OF PHYSIOTHERAPY IN VARIOUS CONDITIONS/SPECIALITIES

UNIT-4.1 INTRODUCTION TO NEUROLOGICAL PHYSIOTHERAPY

4.1.1 Introduction and Brief description about the neurological physiotherapy

4.1.2 Stroke - Definition, causes, clinical features and outlines of management with emphasis on physiotherapy management. Hemiparesis And Hemiplegia.

4.1.3 Spinal cord injury- Definition, causes, clinical pictures, secondary complications and Physiotherapy management in acute and sub acute phase. Paraparesis and Paraplegia

4.1.4 Parkinsonism- Definition, aetiopathology, clinical features and management with emphasis on physiotherapy

4.1.5 Cerebral palsy- Definition, causes, types, clinical features, normal milestones of development and management of cerebral palsy.

4.1.6 Ataxia- Definition, types – cerebellar and sensory ataxia

General principles of management of ataxia

4.1.7 Peripheral nerve injury - Definition and classification

Degeneration and Regeneration

General Principles of management

Clinical features and Physiotherapy Management of:

Brachial plexus injury-Erb's palsy and Klumpke's palsy

Radial nerve injury - wrist drop

Ulnar and Median nerve-Claw Hand

Common peroneal nerve injury- foot drop

4.1.8 Awareness of the following neurological conditions

- Epilepsy
- Guillianbarre syndrome
- Bell's palsy
- Multiple sclerosis

- Alzheimer's disease

UNIT-4.2 INTRODUCTION TO ORTHOPAEDIC PHYSIOTHERAPY

4.2.1 Introduction and Brief description about the orthopaedic physiotherapy

4.2.2 Fracture-Definition — types -clinical features, and general principles of management

Mention the Complications of fracture

Myositis ossificans and Volkmann's ischemic contracture

Dislocation and subluxation

Soft tissue injury- Sprain and Strain

Rice Therapy

Mechanism, Clinical features and management of injury to lateral ligament of Ankle joint as an example.

4.2.3 Arthritis - Definition and Types

4.2.4 Clinical features and general management of Rheumatoid arthritis

4.2.5 Clinical features and general management of Osteoarthritis

4.2.6 Clinical features and general management of Ankylosing spondylitis

4.2.7 Awareness of the following orthopaedic conditions

Cervical and lumbar spondylosis

Periarthritis shoulder

Tennis elbow

Golfers elbow

Plantar fasciitis

4.2.8 Amputation

Definition of amputation

Indication of amputation

Types of amputation

Levels of amputation

Complications of amputation

Pre and post operative Physiotherapy care

Stump and its management

UNIT4.3 INTRODUCTION OF PAEDIATRIC CONDITIONS AND RELEVANCE OF PHYSIOTHERAPY

- Cerebral palsy
- CTEV
- CDH
- Spina Bifida
- Erb's Palsy
- Torticollis

Unit-4.4 INTRODUCTION OF PHYSIOTHERAPY IN SURGICAL CONDITION

4.4.1 Head injury-Aetiology,clinical features and importance of physiotherapy

4.4.2 Spinal cord injury--Aetiology,clinical features and importance of physiotherapy

4.4.3 Burns-Types of Burn, Causes of Burn and Rule of nine.

UNIT-4.5 ORTHOTICS AND PROSTHETICS

Definition, types and Indications

UNIT-4.6 GERIATRIC PHYSIOTHERAPY

4.6.1. Common condition seen in old age

4.6.2. Introduction to geriatric Physiotherapy

4.6.3. Forms of Geriatric Physical Therapy

4.6.4. Principles of Geriatric Physical Therapy

4.6.5. Geriatric physical therapy program

List of practicals

1. Positioning of stroke patient
2. Passive movement and mobilization
3. Transfer technique
4. Resisted exercise
5. Frenkals exercise
6. Relaxation technique
7. Stretching of cerebral palsy
8. Wrist drop; orthotic application and preparation for electrotherapy treatment
9. Application of elastocrape bandage in lateral ligament injury
10. Isometric exercise for knee joint arthritis
11. Isometric neck exercise
12. Neck mobility exercise
13. Low back exercises
14. Preparation of ultra sound treatment for tennis elbow
15. Preparation of ultra sound treatment for golfers elbow
16. Correction of CTEV
17. Correction of torticollis
18. Therapeutic interventions to prevent complications of chronic bedridden patients
19. Donning and doffing of orthotics
20. Burn- positioning and stretching
21. mobility exercise in geriatrics

11. Learning outcome of the Units (module wise)

Learning outcomes of the Module 3

Learner will be able to

- Assist the physiotherapist to do passive movement
- Assist the physiotherapist to do active exercises
- Do manual muscle testing of major muscles
- Check range of motion of major joints
- Assist the physiotherapist in mobilising orthopaedic patients.
- Prepare and maintain suspension therapy unit
- Prepare the patients and manage safety precautions in hydrotherapy.
- Prepare electrotherapy equipments and patients for treatment.
- Prepare the patient for postural drainage
- Demonstrate the breathing exercise to the client

Learning outcomes of the Module 4

Learner will be able to

- Assist the physiotherapist in management of Hemiplegic patients
- Assist the physiotherapist in management of paraplegic patients
- Assist the physiotherapist in management of Parkinson patients
- Assist the physiotherapist in management of cerebral palsied child
- Assist the physiotherapist in management of Ataxia
- Use the orthotics and prosthetic in various deformities

- Able to assist in fracture management
- Able to assist the physiotherapist in management of various arthritic conditions
- Able to assist in gait training
- Able to assist in physiotherapy care of amputee patient
- Able to assist in geriatric care

12. SCHEME OF WORK

MODULE 3

Month	Name of Unit	Period
June	INTRODUCTION TO PHYSIOTHERAPY	25
June, July	EXERCISE THERAPY	150
August	HUMAN LOCOMOTION (GAIT)	25
August	HYDRO THERAPY	15
August	SUSPENSION THERAPY	5
August	RELAXATION	5
August	CHEST PHYSIOTHERAPY	10
September	ELECTROTHERAPY	105
	TOTAL	340

MODULE 4

Month	Name of Unit	Period
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November	INTRODUCTION TO NEUROLOGICAL PHYSIOTHERAPY	90
November		105
December	INTRODUCTION TO ORTHOPAEDIC PHYSIOTHERAPY	
December	INTRODUCTION OF PAEDIATRIC CONDITIONS AND RELEVANCE OF PHYSIOTHERAPY	40
January		
February	INTRODUCTION OF PHYSIOTHERAPY IN SURGICAL CONDITION	40
February	ORTHOTICS AND PROSTHETICS	25
February, march	GERIATRIC PHYSIOTHERAPY	40
	Total	340

13. STRUCTURE OF MODULE -3

UNIT NO	UNIT NAME	PERIODS
3.1	INTRODUCTION TO PHYSIOTHERAPY	25
3.2	EXERCISE THERAPY	150
3.3	HUMAN LOCOMOTION (GAIT)	25
3.4	HYDRO THERAPY	15

3.5	SUSPENSION THERAPY	5
3.6	RELAXATION	5
3.7	CHEST PHYSIOTHERAPY	10
3.8	ELECTROTHERAPY	105
	Total	340

14. STRUCTURE OF MODULE -4

UNIT NO	UNIT NAME	PERIODS
4.1	INTRODUCTION TO NEUROLOGICAL PHYSIOTHERAPY	90
4.2	INTRODUCTION TO ORTHOPAEDIC PHYSIOTHERAPY	105
4.3	INTRODUCTION OF PAEDIATRIC CONDITIONS AND RELEVANCE OF PHYSIOTHERAPY	40
4.4	INTRODUCTION OF PHYSIOTHERAPY IN SURGICAL CONDITION	40
45	ORTHOTICS AND PROSTHETICS	25
4.6	GERIATRIC PHYSIOTHERAPY	40

	Total	340
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15. Class Room Activities

- Multimedia presentation
- Discussion
- Debate
- Seminar
- Assignments
- Magazine preparation
- Album preparation
- Chart preparation
- Poster Preparation
- Role play
- Quiz
- Survey
- Collection
- Model Preparation

16. Practical Activities

- Demonstration
- Case study
- Hands on experience
- Survey
- Field study

- Field visit

PART- B

17. OVER VIEW OF MODULE 3

Students have previous ideas about Anatomy and Physiology of Human body. In this module the student will be able to get familiarize with commonly used physiotherapy equipments in exercise and electrotherapy. The learner should identify the common physiotherapy equipments in exercise and electro therapy. This module introduces different types of equipments used in Physiotherapy clinics with emphasise on its usage. Indications and maintenance. The student also acquires the skill in preparation of the client for treatment and basic physiotherapy techniques including exercise, posture, gait training, transfer techniques etc

After completion of this module the students will be able to assist the physiotherapist in using various electrotherapy and exercisetherapy equipments in a clinical setup. Also student will be able to assist the therapist in therapies like suspension therapy, hydrotherapy and chest physiotherapy.

18. UNIT-WISE (About the unit)

Module 3

FUNDAMENTALS OF PHYSIOTHERAPUTICS

Unit 3.1 INTRODUCTION TO PHYSIOTHERAPY		25 Periods
Unit No.	UNIT NAME	Periods
3.1	Definition Branches of physiotherapy -neurological, orthopaedic, paediatric, sports, geriatric, women health,community based rehabilitation etc. Scope of physiotherapy General goals of physiotherapy	25
UNIT3.2	EXERCISE THERAPY	150
3.2.1	INTRODUCTION TO EXERCISE THERAPY	5
3.2.2	MOVEMENT AND TYPES OF MOVEMENTS 1.Active movement <ul style="list-style-type: none"> • Free exercise • Assisted exercise • Assisted-resisted exercise • Resisted exercise, 2.Passive movement 3. Reflex movements	50

<p>3.2.3</p>	<ul style="list-style-type: none"> • FUNDAMENTAL POSITIONS • Standing • kneeling, • sitting • lying • hanging 	<p>15</p>
<p>3. 2.4</p>	<ul style="list-style-type: none"> • DERIVED POSITIONS • Standing • kneeling, • sitting • lying • hanging 	<p>20</p>
<p>3. 2.5</p>	<p>MANUAL MUSCLE TEST OF MAJOR MUSCLE GROUP</p> <ul style="list-style-type: none"> • Shoulder-flexors ,extensors, abductors and adductors • Elbow-flexors and extensors • Hip-flexors ,extensors, abductors and adductors • Knee-flexors and extensors 	<p>20</p>
<p>3.2.6</p>	<p>RANGE OF JOINT MOTION OF MAJOR JOINTS</p> <ul style="list-style-type: none"> • Shoulder-flexion ,extention.abduction and adduction • Elbow-flexion and extention • Hip-flexion ,extention, abduction and adduction • Knee-flexion and extention 	<p>20</p>

3.2.7	POSTURE <ul style="list-style-type: none"> • Definition and Types (Good and Bad posture) 	5
3. 2.8	EXERCISE THERAPY EQUIPMENTS <ul style="list-style-type: none"> • Suspension unit • Static cycle • Treadmill • Quadriceps table • Shoulder wheel • Hand exerciser • Medicine ball, • Swiss ball • Abduction ladder • Parellel bar • Tilt table • Wheelchair • Crutches 	15
UNIT-3 .3	HUMAN LOCOMOTION (GAIT)	25
3.3.1	Definition and Gait cycle	3

3.3.2	Pathological gait Circumductory gait Scissoring gait Festinent gait Ataxic gait High stepping gait Antalgic gait	7
3.3.3	Gait training Non weight bearing gait training Partial weight bearing gait training Full weight bearing gait training	10
3. 3.4	Transfer techniques Wheel chair to bed Bed to wheelchair	5
UNIT-3.4	HYDROTHERAPY	15
3.4.1	Pool therapy	5
3.4.2	Contrast bath	5
3.4.3	Cryo therapy	5
UNIT-3.5	SUSPENSION THERAPY	5
3.5.1	Types of suspension therapy	2
3.5.2	Indications of suspension therapy	3

3.6	RELAXATION	5
3.6.1	Definition, types and techniques	5
3.7	CHEST PHYSIOTHERAPY	10
3.7.1	Breathing exercise	5
3.7.2	Postural drainage	5
3.8	ELECTROTHERAPY	105
3.8.1	Introduction of electrotherapy	5
3.8.2	Classification -low frequency, medium frequency and high frequency equipments	10
3.8.3	Preparation and safety measures for patient and equipments	5
3.8.4	Thermotherapy Benefits of thermotherapy Contraindications Thermotherapy Applications	25
3.8.5	Brief description of electrotherapy equipments. IRR-Infra red radiation US-Ultra sound SWD-Short Wave Diathermy IFT-Interferential therapy	55

	TENS-Transcutaneous Electrical Nerve Stimulator Cold pack Hot pack Wax bath Laser	
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19. UNIT GRID

Module 3 FUNDAMENTALS OF PHYSIOTHERAPUTICS			
IDEAS/ CONCEPT/SKILLS	LEARNING OUTCOMES	SUGGESTED ACTIVITIES	ASSESSMENT
3.1.INTRODUCTION TO PHYSIOTHERAPY			
3.1.1 Introduction	To achieve basic	Brain storming	Participation in the

	knowledge about the physiotherapy	Collection Discussion	discussion
3.1.2 Definition	Define the physiotherapy	Brain storming Collection Discussion	Participation in the discussion
3.1.3 Branches	Understand the branches		Participation in the discussion
3.1.4 Scope	Understand the scope of physiotherapy	Brain storming Collection Discussion	Participation in the discussion
3.1.5 General goals	Identify the the different goals of physiotherapy	Brain storming Collection Discussion	Participation in the discussion

3.2 EXERCISE THERAPY			
3.2.1 Introduction to exercise therapy	To achieve Basic knowledge about exercise therapy	Discussion	Participation
3.2.2 Movement and types of movement	Identify the differant types of movements	Discussion Practical activities	Participation in the discussion Record

			Class test
3.2.3 Fundamental positions	Demonstrate the fundamental positions	Discussion Practical activities Chart preparation	Participation in the discussion Class test Record
3.2.4 Derived position	Able to demonstrate the derived positions	Discussion Practical activities Chart preparation	Participation in the discussion Record Class test
3.2.5 Manual muscle test of major muscle groups	Check the muscle strength of major muscle group	Discussion Practical activities	Participation in the discussion Class test
3.2.6 Range of motion of major joints	Able to Measure the range of motion of major joints	Discussion Practical activities	Participation in the discussion Record Class test
3.2.7 Posture	Able to identify good and bad posture	Discussion Practical activities Chart preparation	Participation in the discussion Class test Record
3.2.8 Exercise therapy equipments	Identify the exercise therapy equipment	Discussion Practical activities Field visit	Participation in the discussion Class test

3.3 HUMAN LOCOMOTION			
<p>3.3.1 Definition and Gait cycle</p> <p>Pathological gait</p> <p>Circumductory gait</p> <p>Scissoring gait</p> <p>Festinent gait</p> <p>Ataxic gait</p> <p>High stepping gait</p>	<p>To understand the steps of normal human locomotion and to identify different pathological gait patterns</p>	<p>Practice by imitating different types of gait</p> <p>Practical activities</p> <p>Multimedia</p>	<p>Participation in the discussion</p> <p>Class test</p>
<p>3.3.2 Gait training</p> <p>Non weight bearing gait training</p> <p>Partial weight bearing gait training</p> <p>Full weight bearing gait training</p>	<p>To assist the physiotherapist in different types of gait training</p>	<p>Practical activities</p>	
<p>3.3.3 Transfer techniques</p> <p>Wheel chair to bed</p> <p>Bed to wheelchair</p>	<p>To gain expertise in the transferring the patients from bed to chair and vice versa.</p>	<p>Practical activities</p>	<p>Participation in the Practical activity</p>
3.4 HYDRO THERAPY			

3.4.1 Pool therapy	To gain expertise in the preparation of pool for treatment session and assisting the physiotherapist in treatment.	Field visit Discussion	Class test Evaluation Report
3.4.2 Contrast bath	To gain expertise in the preparation for contrast bath treatment session and assisting the physiotherapist in treatment.	Practical activities Discussion	Class test Participation in the discussion
3.4.3 Cryo therapy	To gain expertise in the preparation for cryo therapy treatment session and assisting the physiotherapist in treatment.	Practical activities Discussion	Class test Participation in the discussion
3.5 SUSPENSION THERAPY			

3.5.1 Types of suspension therapy	To gain expertise in the preparation and maintenance of the suspension unit and assisting the physiotherapist in treatment.	Discussion Practical activities	Participation in the discussion
3.5.2 Indications of suspension therapy	Know the indications	Discussions	Class test
3.6 RELAXATION			
3.6.1 Definition, types and techniques	To teach the patient for attaining good relaxation prior to the treatment	Demonstration	Participation in activities
3.7 CHEST PHYSIOTHERAPY			
3.7.1 Breathing exercise	Able to understand the importance of breathing exercise Able to demonstrate inspiratory and expiratory breathing exercise	Demonstration discussion	Participation in the discussion Class test
3.7.2 Postural drainage	Able to understand the	Demonstration	Participation in the

	techniques of postural drainage.	discussion	discussion
3.8 ELECTROTHERAPY			
3.8.1 Introduction of electrotherapy.	To understand the advantages of electrotherapy	Discussion Brainstorming	Participation in the discussion
3.8.2 Classification -low frequency, medium frequency and high frequency equipment	To categorize the electrotherapy equipments	Discussion Assignment Demonstration	Participation in the discussion
3.8.3 Preparation and safety measures for patient and equipments	Able to prepare the patient and equipments for treatment	Demonstration Practical	Participation in activities
3.8.4 Thermotherapy	To understand the types and importance of heating modalities	Discussion	Participation in the discussion
3.8.5 Physiological and Therapeutic effects of heat.	To understand the Physiological and Therapeutic effects of heat.	Discussion	Participation in the discussion

3.8.6 Application of heating modality	To know the application of modalities	Practical	Participation in activities
3.8.7 Indication and contraindication of the electrotherapy equipments	To know where to use and not to use electrotherapy	Discussions	Participation in the discussion
3.8.8 Brief description of electrotherapy equipments.	To gain expertise in maintain and checking various electrotherapy equipments and assist the physiotherapist in electrotherapy treatment.	Discussion Assignment Demonstration Practical Chart preparation Practical Demonstration	Participation in the discussion Record

20 Additional Information

1. Activities of daily living
2. First aid and emergency care

21. Assessment activities

- Seminar
- Assignments
- Magazine preparation
- Chart preparation
- Poster Preparation
- Quiz
- Collection
- Model Preparation

22. List of items in portfolio (expected)

- Seminar report
- Assignments
- Chart
- Field visit report
- OJT Report
- Collection book
- Record work

23. Extended activities

- Visit to PMR Dept of medical colleges
- Visit to physiotherapy clinic
- Visit to special school
- Participation in Exhibitions

- Working with care group children

24 Over view of Module 4

Students have already acquired knowledge about basics of physiotherapy. This module enables the students to acquire the knowledge about the various conditions in medical and surgical disciplines like Neurology, Orthopaedics, Paediatrics, and Geriatrics. The learner also acquires the concept regarding types and indications of orthotics and prosthetics.

On successful completion of the fourth module the learner will develop an overall idea of different disease conditions and the role of physiotherapist in the management of these conditions. The learner will be able to do the preparation of the client, basic physiotherapy techniques based on the condition under the Physiotherapist's supervision. The learner can also assist the Physiotherapist in the management of various neurological, orthopaedic, paediatric and geriatric conditions in various rehabilitation centres like physiotherapy clinics, old age homes, special schools, palliative centres etc.

UNIT-WISE (ABOUT THE UNIT)

Module 4

APPLICATIONS OF PHYSIOTHERAPY IN VARIOUS CONDITIONS/SPECIALITIES

UNIT-4.1 INTRODUCTION TO NEUROLOGICAL PHYSIOTHERAPY 90		
Unit No	Unit Name	Periods
4.1.1	Introduction and Brief description about the neurological physiotherapy	5
4.1.2	Stroke - Definition, causes, clinical features and outlines of management with emphasis on physiotherapy management. Hemiparesis And Hemiplegia.	12
4.1.3	Spinal cord injury- Definition, causes, clinical pictures, secondary complications and Physiotherapy management in acute and sub acute phase.Paraparesis and Paraplegia	13
4.1.4	Parkinsonism- Definition, aetiopathology, clinical features and management with emphasis on physiotherapy	10
4.1.5	Cerebral palsy- Definition, causes, types, clinical features, normal mile stones of development and management of CP	10

4.1.6	Ataxia- Definition, types – cerebellar and sensory ataxia .General principles of management.	10
4.1.7	Peripheral nerve injury - Definition and classification Degeneration and Regeneration General Principles of management Clinical features and Physiotherapy Management of: Brachial plexus injury-Erb’s palsy and Klumpke’s palsy Radial nerve injury - wrist drop Ulnar and Median nerve-Claw Hand Common peroneal nerve injury- foot drop	20
4.1 .8	Awareness of the following neurological conditions Epilepsy Guillianbarre syndrome Bell’s palsy Multiple sclerosis Alzheimer’s disease	20
UNIT-4.2 INTRODUCTION TO ORTHOPAEDIC PHYSIOTHERAPY 105		
4.2.1	Introduction and Brief description about the orthopaedic physiotherapy	10

4.2.2	<p>Fracture-.Definition — types -clinical features, and general principles of management</p> <p>Mention the Complications of fracture-</p> <p>Myositis ossificans and Volkmann’s ischemic contracture</p> <p>Dislocation and subluxation</p> <p>Soft tissue injury- Sprain and Strain</p> <p>Rice Therapy</p> <p>Mechanism, Clinical features and management of injury to lateral ligament of Ankle joint as an example.</p>	30
4.2.3	Arthritis - Definition and Types	5
4.2.4	Clinical features and general management of Rheumatoid arthritis	5
4.2.5	Clinical features and general management of Osteoarthritis	5
4.2.6	Clinical features and general management of Ankylosing spondylitis	5
4.2.7	<p>Awareness of the following orthopaedic conditions</p> <p>Cervical and lumbar spondylosis</p> <p>Periarthritis shoulder</p> <p>Tennis elbow</p> <p>Golfers elbow</p> <p>Plantar fasciitis</p>	20

4.2.8	Amputation Definition of amputation Indication of amputation Types of amputation Levels of amputation Complications of amputation Pre and post operative Physiotherapy care Stump and its management	25
UNIT4.3 INTRODUCTION OF PAEDIATRIC CONDITIONS AND RELEVANCE OF PHYSIOTHERAPY 40		
4.3.1	Cerebral palsy CTEV CDH Spina Bifida Erb's Palsy Torticollis	40
Unit-4.4 INTRODUCTION OF PHYSIOTHERAPY IN SURGICAL CONDITION 40		
4.4.1	Head injury-Aetiology,clinical features and importance of physiotherapy	15
4.4.2	Spinal cord injury--Aetiology,clinical features and importance of physiotherapy	15

4.4.3	Burns-Types of Burn, Causes of Burn and Rule of nine.	10
UNIT-4.5 ORTHOTICS AND PROSTHETICS		25
4.5.1	Definition, types and Indications	25
UNIT-4.6 GERIATRIC PHYSIOTHERAPY		40
4.6.1	Common condition seen in old age	10
4.6.2	Introduction to geriatric Physiotherapy	5
4.6.3	Forms of Geriatric Physical Therapy	10
4.6.4	Principles of Geriatric Physical Therapy	5
4.6.5	Geriatric physical therapy program	10

UNIT GRID

Module 4

APPLICATIONS OF PHYSIOTHERAPY IN VARIOUS CONDITIONS/SPECIALITIES

Module 4 APPLICATIONS OF PHYSIOTHERAPY IN VARIOUS CONDITIONS/SPECIALITIES

IDEAS/ CONCEPT	LEARNING OUTCOMES	SUGGESTED ACTIVITIES	ASSESSMENT
4.1 INTRODUCTION TO NEUROLOGICAL PHYSIOTHERAPY			
4.1.1 Introduction of neurological physiotherapy	To describe the neurological physiotherapy	Discussion	Oral test
4.1.2 Stroke –Hemi paresis Hemiplegia	To explain the clinical features and outline of physiotherapy management. Able to assist physiotherapist in mangament of hemiparesis ans hemiplegia	Brain storming Discussion Field visit Practical	Practical evaluation Class test
4.1.3 Spinal cord injury	To describe clinical features and outline of physiotherapy management. Able to assist physiotherapist in mangament of paraplegia,paraparesis,quadripegia and quadriparesis	Brain storming Discussion Field visit Practical	Practical evaluation Class test

4.1.4 Parkinsonism	To explain the clinical features and outline the physiotherapy management. Able to assist physiotherapist in mangament of parkinson patient	Brain storming Discussion Field visit Practical	Practical evaluation Class test
4.1.5 Cerebral palsy	To identify the clinical features and outline of physiotherapy management. Able to assist physiotherapist in mangament of cerebral palsied child	Brain storming Discussion Field visit Practical	Practical evaluation Class test
4.1.6 Ataxia	To define the clinical features and outline of physiotherapy management. Able to assist physiotherapist in mangament of ataxic patient	Brain storming Discussion Field visit Practical	Practical evaluation Class test
4.1.7 Peripheral nerve injury	Able to list out the causes and clinical features of peripheral nerve injury-wrist drop, claw hand and foot drop Able to assist the physiotherapist in use of splints	Brain storming Discussion Field visit (orthotic and prosthetic lab) Practical	Practical evaluation Class test Quiz
4.1.8 Awareness of some neurological conditions	To briefly describe Epilepsy Guillianbarre syndrome	Brain storming Discussion	Class test

	Bell's palsy Multiple sclerosis Alzheimer's disease		
4.2 INTRODUCTION TO ORTHOPAEDIC PHYSIOTHERAPY			
4.2.1 Introduction of orthopedic physiotherapy	To describe about the orthopedic physiotherapy	Discussion	Oral test
4.2.2 Fracture	To list out the classification, clinical features and complications of fracture. To explain the management of different types of fracture Myositis ossificans and Volkmann's ischemic contracture Dislocation and subluxation Soft tissue injury- Sprain and Strain Rice Therapy Mechanism, Clinical features and management of injury to lateral ligament of Ankle joint as an example.	Brain storming Discussion Field visit Practical	Practical evaluation Class test
4.2.3 Arthritis	To define the term arthritis and list out the classification	Discussion	Class test

4.2.4 Rheumatoid arthritis	To describe clinical features and general physiotherapy management of Rheumatoid arthritis	Brain storming Discussion Seminar Mulimedia presentation	Practical evaluation Class test
4.2.5 Osteoarthritis	To describe clinical features and general physiotherapy management of Osteoarthritis	Brain storming Discussion Survey Mulimedia presentation	Practical evaluation Class test
4.2.6 Ankylosing spondylitis	To describe clinical features and general physiotherapy management of Ankylosing spondylitis	Brain storming Discussion Mulimedia presentation	Practical evaluation Class test
4.2.7 Awareness of some orthopedic conditions	To briefly describe Cervical and lumbar spondylosis Periarthritis shoulder Tennis elbow Golfers elbow Plantar fasciitis	Brain storming Discussion	Class test
4.2.8 Amputation	To explain the indication,types and levels of amputation and care of stump Assist physiotherapist in mangament of amputee patient	Discussion Multimedia presentation Chart Preparation	Practical evaluation Class test
UNIT4.3 INTRODUCTION OF PAEDIATRIC CONDITIONS AND RELEVANCE OF PHYSIOTHERAPY			

4.3.1 Cerebral palsy	To describe Cerebral palsy To assist the physiotherapist in management of cerebralpalsy	Discussion Multimedia presentation	Class test
4.3.2 CTEV	To briefly describe CTEV	Discussion Multimedia presentation	Class test
4.3.3 CDH	To briefly describe CDH	Discussion Multimedia presentation	Class test
4.3.4 Spina Bifida	To briefly describe Spina Bifida	Discussion Multimedia presentation	Class test
4.3.5 Erb's Palsy	To briefly describe Erb's Palsy	Discussion Multimedia presentation	Class test
4.3.6 Torticollis	To briefly describe Torticollis	Discussion Multimedia presentation	Class test
Unit-4.4 INTRODUCTION OF PHYSIOTHERAPY IN SURGICAL CONDITION			
4.4.1 Head injury	To familiarize with the importance of physiotherapy in Head injury	Brain storming Seminar Practicals	Practical evaluation Class test
4.4.2 Spinal cord injury	To familiarize with the importance of physiotherapy in Spinal cord injury	Brain storming Seminar Practicals	Practical evaluation Class test

4.4.3 Burns	To familiarize with the importance of physiotherapy in Burns	Brain storming Seminar Practicals	Practical evaluation Class test
UNIT-4.5 ORTHOTICS AND PROSTHETICS			
4.5.1 Definition, types and Indications	To define orthotics and prosthetics and list out the types and indication	Brain storming Practicals	Practical evaluation Class test
UNIT-4.6 GERIATRIC PHYSIOTHERAPY			
4.6.1. Common condition seen in old age	To familiarize with common problems of geriatric patients	Brain storming Discussion Seminar Survey	Class test
4.6.2. Introduction to geriatric Physiotherapy	To understand the history,concept and methods of geriatric physiotherapy	Discussion Brain storming	class test
4.6.3. Forms of Geriatric Physical Therapy	To understand the role of physiotherapist, exercise, manual therapy and education in geriatric physiotherapy	Discussion Brain storming	Class test

4.6.4. Principles of Geriatric Physical Therapy	To familiarize with Aim of geriatric physiotherapy and different settings	Field visit Discussion	Class test Report
4.6.5. Geriatric physical therapy program	To understand the concept of assessment ,goal setting, treatment intervention and re-assessment	Seminar Discussion	Seminar report Class test

Additional information

1. **Community based rehabilitation**
2. **Mental retardation vs mental illness**
3. **Leprosy**
4. **Polio**
5. **Tuberculosis**
6. **Respiratory conditions like Asthma, Bronchitis, and Pneumonia.**

Assessment activities

- Seminar
- Assignments
- Magazine preparation
- Chart preparation
- Poster Preparation
- Quiz
- Collection
- Model Preparation

List of items in portfolio (expected)

- Seminar report
- Assignments
- Chart
- Field visit report
- OJT Report
- Collection book
- Record work

AT THE END OF MODULE 4

Extended activities

- Visit to special school
- Visit to orthotic center
- Visit to old age home
- Different physiotherapy clinics

25 On the Job Training g

OJT is an essential part of vocational education to impart technical skills in specific areas. To fulfill the learning outcomes the students must be exposed to on the job training.

OJT helps the students

- To develop vocational skill
- To develop personal qualities.
- To develop values, attitudes and interests.
- Helps to apply their knowledge in real situations
- Helps to develop a professional attitude

The OJT can be given at the end of the second and fourth module for TWO WEEKS each. It can be decided according to the facility and convenience of the school and OJT centers. The OJT centers can be

- Recognized physiotherapy centers
- Recognized fitness center
- Gymnasium

- Physiotherapy clinic

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