Study & Evaluation Scheme

Of

Bachelor of Physiotherapy

[Applicable w.e.f. Academic Session 2013-14 till revised]

[with revision approved by AC/EC meeting date September 21, 2013]

TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244001

Website: www.tmu.ac.in

Registrar

TEERTHANKER MAHAVEER UNIVERSITY
(Established under Govt. of U. P. Act No. 30, 2008)
Delhi Road, Bagarpur, Moradabad (U.P)
Study & Evaluation Scheme

of
Bachelor of Physiotherapy
SUMMARY

Programme : Bachelor of Physiotherapy (BPT)

Duration : Four years full time and six months internship (Annual System)

Medium : English

Minimum Required Attendance : 75 % (Theory) 80 % (Lab)

Maximum Credits : **104**

Minimum credits required for the degree : **104**

Assessment (Theory) :

Internal	External	Total
30	70	100

Internal Evaluation (Theory Papers)

Class Test I	Class Test II	Class Test III	Assignment(s)	Other Activity (including attendance	Total
Best two out of the three					
10	10	10	5	5	30

Evaluation Lab/Dissertations & Project Reports :

Internal	External	Total
50	50	100

Duration of Examination :

External	Internal
3 hrs.	1 ½ hr.

To qualify the course a student is required to secure a minimum of 50% marks in each subject including the year-end examination and teacher's continuous evaluation (i.e. both internal and external).
A candidate, who secures less than 50% marks in the year end examination, shall be deemed to have failed in that subject/course(s). ***To be eligible for the next year-end examination, a candidate must not have failed in more than two papers.*** *Failure to fulfil this requirement will cause the student either to revert back to corresponding junior batch of students and continue his/her studies with them for rest of the program or clear the backlog as an external/ reappear candidate. A candidate who has been placed under re-appear category in any of the subject shall be allowed to appear in supplementary examination to be conducted within six months after declaration of the result. Students failing in this supplementary examination shall be given another chance to appear in examination at the end of the year with the next batch. A student has to pass mandatorily in theory & Lab separately. If a candidate fails in either theory or Lab, he/she will have to reappear in both..*

Note: For internal assessment purpose, there will be three Class Tests in a year and best two tests will be considered for the final result. Those students who have been admitted through lateral entry have to qualify the examination of biochemistry in the second year of BPT.

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Study & Evaluation Scheme
Programme: Bachelor of Physiotherapy
Year -I

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT102	Human Anatomy	4	-	-	4	30	70	100
2	BPT103	Human Physiology	4	-	-	4	30	70	100
3	BPT104	Biochemistry	2	-	-	2	30	70	100
4	BPT105	Fundamentals of Exercise Therapy	3	-	-	3	30	70	100
5	BPT106	Fundamentals of Electrotherapy	3	-	-	3	30	70	100
6	BPT108	Communication Skills	3	-	-	3	30	70	100
7	BPT151	Human Anatomy (Lab)	-	-	3	2	50	50	100
8	BPT152	Human Physiology (Lab)	-	-	2	1	50	50	100
9	BPT153	Biochemistry (Lab)	-	-	2	1	50	50	100
10	BPT154	Fundamentals of Exercise Therapy (Lab)	-	-	3	2	50	50	100
11	BPT155	Fundamentals of Electrotherapy (Lab)	-	-	2	1	50	50	100
		Total	**19**		**12**	**26**	**430**	**670**	**1100**

YEAR – II

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT201	Electro Therapy & Actino-therapy	3	-	-	3	30	70	100
2	BPT202	Exercise Therapy	3	-	-	3	30	70	100
3	BPT203	Biomechanics & Kinesiology	4	-	-	4	30	70	100
4	BPT204	Pathology & Microbiology	5	-	-	5	30	70	100
5	BPT205	Pharmacology	3	-	-	3	30	70	100
6	BPT206	Psychology & Sociology	4	-	-	4	30	70	100
7	BPT251	Electro Therapy & Actinotherapy (Lab)	-	-	4	2	50	50	100
8	BPT252	Exercise Therapy (Lab)	-	-	4	2	50	50	100
9	BPT253	Biomechanics & Kinesiology (Lab)	-	-	2	1	50	50	100
10	BPT254	Seminar	-	2	-	1	50	50	100
		Total	**22**	**2**	**10**	**28**	**380**	**620**	**1000**

YEAR – III

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT301	Surgery	3	-		3	30	70	100
2	BPT302	Medicine	3	-		3	30	70	100
3	BPT305	Physical Diagnosis & Manipulative Skills	3	-		3	30	70	100
4	BPT306	Clinical Orthopedics	3			3	30	70	100
5	BPT307	Clinical Neurology	3	-		3	30	70	100
6	BPT352	Medicine (Lab)	-	-	2	1	50	50	100
7	BPT355	Physical Diagnosis & Manipulative Skills(Lab)	-	-	2	1	50	50	100
8	BPT358	Clinical Orthopedics (Lab)	-	-	2	1	50	50	100
9	BPT359	Clinical Neurology (Lab)	-	-	2	1	50	50	100
10	BPT356	Seminar	-	2	-	1	100		100
11	BPT357	Supervised Clinical Training	-	-	4	2	50	50	100
		Total	**15**	**2**	**12**	**22**	**500**	**600**	**1100**

YEAR – IV

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT401	Physiotherapy in Orthopaedic Conditions	3	-	-	3	30	70	100
2	BPT402	Physiotherapy in Neurological Conditions	3	-	-	3	30	70	100
3	BPT406	Physiotherapy in Cardio Respiratory and General Conditions	3	-	-	3	30	70	100
4	BPT407	Physiotherapy in Sports	3	-	-	3	30	70	100
5	BPT408	Rehabilitation in Community Medicine & Physiotherapy	2	-		2	30	70	100
6	BPT409	Research Methodology & Bio-Stastistics	2	-		2	30	70	100
7	BPT451	Physiotherapy in Orthopaedic Conditions (Lab)	-	-	3	2	50	50	100
8	BPT452	Physiotherapy in Neurological Conditions (Lab)	-	-	3	2	50	50	100
9	BPT456	Seminar	-	2	-	1	50	50	100
10	BPT457	Supervised Clinical Training	-	-	6	3	50	50	100
11	BPT458	Physiotherapy in Cardio Respiratory and General Conditions (Lab)	-	-	3	2	50	50	100
12	BPT459	Physiotherapy in Sports (Lab)	-	-	2	1	50	50	100
13	BPT460	Rehabilitation in Community Medicine & Physiotherapy (Lab)	-	-	2	1	50	50	100
	Total		**16**	**2**	**19**	**28**	**530**	**770**	**1300**

L- Lecture
1L = 1Hr

P- Lab
1P= 1 Hrs

S= Seminar
1S=1Hr

C-Credits
1C =1 Hr of Lecture
= 2 Hrs of Lab/Seminar

Study and Evaluation Scheme

Of

Bachelor of Physiotherapy

[Applicable w.e.f. Academic Session 2019-20]

[As per CBCS guidelines given by UGC]

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department. Student exposure of patients from nearby urban as well as rural areas improves capability, learning, skills and management skills..

15. Specialassistanceprogramforslowlearners&fastlearners: Theslowaswellasthefastlearnersare identified on the basis of the individual performance in the class tests. Special classes or assignments are undertakentocatertotheirrespectiveneeds.Fastlearnersaregivenspecialtaskstostimulatetheirabilities and make the maximum utilization as well as up gradation of their clinicalskills.

16. Mentoring and Counseling: Every student shall be provided with a faculty mentor to help him/her in their personal and academic issues. The mentor maintains a mentorship handbook of all his/her mentees withcompletepersonalandparentdetails.Itisessentialtomeetatleastonceina month. Thementorenters the discussions held, advice given and efforts & improvements made by the mentee. This handbook must be counter signed by the HOD once amonth.

Bachelor of Physiotherapy

YEAR –I

S.No	Type	Course Code	Course	Periods			Credits	Evaluation Scheme		Total
				L	T	P		Internal	External	

1	CC-1	BPT102	Human Anatomy	3	-	-	3	30	70	100
2	CC-2	BPT103	Human Physiology	3	-	-	3	30	70	100
3	CC-3	BPT104	Biochemistry	2	-	-	2	30	70	100
4	DSC-1	BPT105	Fundamentals of Exercise Therapy	3	-	-	3	30	70	100
5	DSC-2	BPT106	Fundamentals of Electrotherapy	3	-	-	3	30	70	100
6	AECC-1	BPT139	English Communication	2	-	2	3	30	70	100
7.	AECC-2	BPT109	Environmental Studies	2	-	-	2	30	70	100
8.	AECC-3	BPT110	First Aid And Emergency Nursing	1	1	-	2	30	70	100
9.	SEC-1	BPT151	Human Anatomy (Lab)	-	-	4	2	50	50	100
10.	SEC-2	BPT152	Human Physiology (Lab)	-	-	2	1	50	50	100
11.	SEC-3	BPT153	Biochemistry (Lab)	-	-	2	1	50	50	100
12.	SEC-4	BPT154	Fundamentals of Exercise Therapy (Lab)	-	-	2	1	50	50	100
13.	SEC-5	BPT155	Fundamentals of Electrotherapy (Lab)	-	-	2	1	50	50	100
			TOTAL	**19**	**1**	**14**	**27**	**490**	**810**	**1300**

YEAR II

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	DSC-3	BPT201	Electrotherapy And Actinotherapy	3	-	-	3	30	70	100
2.	DSC-4	BPT202	Exercise Therapy	3	-	-	3	30	70	100
3.	DSC-5	BPT203	Biomechanics And Kinesiology	3	-	-	3	30	70	100
4.	CC-4	BPT204	Pathology And Microbiology	4	-	-	4	30	70	100
5.	CC-5	BPT205	Pharmacology	3	-	-	3	30	70	100
6.	CC-6	BPT206	Psychology And Sociology	3	-	-	3	30	70	100
7.	SEC-6	BPT210	Computer Applications	2	-	2	3	30	70	100
8.	SEC-7	BPT251	Electrotherapy And Actinotherapy (Lab)	-	-	4	2	50	50	100
9.	SEC-8	BPT252	Exercise Therapy (Lab)	-	-	4	2	50	50	100
10.	SEC-9	BPT253	Biomechanics And Kinesiology (Lab)	-	-	4	2	50	50	100
TOTAL				**21**	**0**	**14**	**28**	**360**	**640**	**1000**

1.	VAC-1	TMUGS202	Managing Self	2	1	-	0	50	50	100

YEAR III

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	CC-7	BPT301	Surgery	3	-	-	3	30	70	100
2.	CC-8	BPT302	Medicine	3	-	-	3	30	70	100
3.	DSC-6	BPT305	Physical Diagnosis And Manipulative Skills	3	-	-	3	30	70	100
4.	CC-9	BPT306	Clinical Orthopedics	3	-	-	3	30	70	100
5.	CC-10	BPT307	Clinical Neurology	3	-	-	3	30	70	100
6.	CC-11	BPT308	Research Methodology And Biostatistics	2	1	-	3	30	70	100
7.	CC-12	BPT309	Community Medicine	2	1	-	3	30	70	100
8.	AECC -4	BPT310	Basic Nutrition And Diet Therapy	2	-	-	2	30	70	100
9.	SEC-10	BPT355	Physical Diagnosis And Manipulative Skills (Lab)	-	-	4	2	50	50	100
10.	SEC-11	BPT357	Supervised Clinical Training	-	-	8	4	50	50	100
11.	GEC-1	-	Open Elective-1	3	-	-	3	30	70	100
12.	DSEC-1	-	Elective -1	2	-	2	3	50	50	100
TOTAL				**26**	**2**	**14**	**35**	**420**	**780**	**1200**

1.	VAC-2	TMUGS302	Managing Work & Others	2	1	-	0	50	50	100

YEAR IV

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	DSC-7	BPT401	Physiotherapy In Orthopaedic Conditions	3	-	-	3	30	70	100
2.	DSC-8	BPT402	Physiotherapy In Neurological Conditions	3	-	-	3	30	70	100
3.	DSC-9	BPT406	Physiotherapy In Cardiorespiratory And General Conditions	3	-	-	3	30	70	100
4.	DSC-10	BPT407	Physiotherapy In Sports	3	-	-	3	30	70	100
5.	DSC-11	BPT410	Community Based Rehabilitation	2	-	-	2	30	70	100
6.	DSC-12	BPT411	Medical Ethics And Evidence Based Practice	1	-	-	1	30	70	100
7.	SEC-12	BPT451	Physiotherapy In Orthopaedic Conditions(Lab)	-	-	2	1	50	50	100
8.	SEC-13	BPT452	Physiotherapy In Neurological Conditions(Lab)	-	-	2	1	50	50	100
9..	SEC-14	BPT458	Physiotherapy In Cardiorespiratory And General Conditions (Lab)	-	-	2	1	50	50	100
10.	SEC-15	BPT459	Physiotherapy In Sports (Lab)	-	-	2	1	50	50	100
11.	SEC-16	BPT466	Community Based Rehabilitation (Lab)	-	-	2	1	50	50	100
12.	SEC-17	BPT457	Supervised Clinical Training	-	-	8	4	50	50	100
13.	GEC-2	-	Open Elective-2	3	-	-	3	30	70	100
14.	RPR-1	BPT460	Research Project	-	-	4	2	100	-	100
15.	DSEC-2	BPT412	Elective-2	3	-	-	3	100	-	100
TOTAL				**21**	**0**	**22**	**32**	**710**	**790**	**1500**

1.	IP-1	BPT461	Internship	-	-	48	24	100	-	100

Discipline Specific Elective Courses (DSEC) Sr. No.	Code	Course	L	T	P	Credit
YEAR III						
1.	BPT358	Basic Life Support	2	-	2	3
YEAR IV						
1.	BPT412	Elective-2	3	-	-	3

*Any MOOC from SWAYAM Platform or any recognized medical portal can be taken as Elective-2 in BPT IV year.

Note :			
L- Lecture	T- Tutorial	P- Practical	C- Credits
1C = 1 Hour L or T 1C = 2 Hour P			

New Course Added

B.P.T-III[rd] Year
COMMUNITY MEDICINE
Minimum Hours: Theory-90 Hrs.

Course code: BPT309 **L-2 T-1 P-0 C-3**

Course objective:

In this subject, students will learn about effects of the environment and the community dynamics on the health of the individual.

Course contents:

UNIT I

HEALTH AND DISEASE **[8 hrs]**

1.Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine.

2 .The role of socio-economic and cultural environment in health and disease.

UNIT II

1. PRINCIPLES OF EPIDEMIOLOGY AND METHODS **[10 hrs]**

Components and Aims, Basic measurements, Methods, Uses of Epidemiology; Infectious disease epidemiology, Dynamics and modes of disease transmission; Host defenses and Immunizing agents, Hazards of Immunization; Disease prevention and control, Disinfection; Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.

2. EPIDEMIOLOGY OF COMMUNICABLE & NON COMMUNICABLE DISEASE [10 hrs]

Respiratory infections, Intestinal infections, Arthropod- borne infections, Zoonoses, Surface infections; Hospital acquired infections; Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries.

UNIT III

1. PUBLIC HEALTH ADMINISTRATION **[10 hrs]**

Health Care Delivery system at Central and state levels, Role of social, economic and cultural factors in the implementation of the national programs.

2. HEALTH PROGRAMMES IN INDIA **[10 hrs]**

Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.

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UNIT IV

1. **DEMOGRAPHY AND FAMILY PLANNING** **[10 hrs]**
   Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.
2. **MATERNAL & CHILD HEALTH CARE.** **[8 hrs]**
3. **NUTRITION AND HEALTH** **[5 hrs]**
   Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.

UNIT V

1. OCCUPATIONAL HEALTH **[5 hrs]**
Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.

2. MENTAL HEALTH **[5 hrs]**
Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health.

3. HEALTH EDUCATION **[4 hrs]**
Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

4. Voluntary Organizations/ NGO's: **[5 hrs]**

Charitable Organizations, Voluntary health agencies–National level and International NGO's, Multilateral and Bilateral agencies.
International health organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To understand the social and environmental factors of health of individual and society.
2. To understand importance of health education in public.
3. To understand rules and detailed information of various health organisation

Textbooks/Reference Books:

1. *Park, Preventive &Social Medicine, Banarsidas Bhanot*
2. *Community Based Rehabilitation of Persons With Disability by Pruthvish S.*
3. *Physiotherapy in Community Health & Rehablitation by Naqvi, Waqar*

Note: Latest edition of the suggested books are recommended.

Added

BPT III rd year
BASIC NUTRITION & DIET THERAPY
(Minimum hours: Theory-45 hrs)

Course Code: BPT 310 L-1, T-0, P-0, C- 1

Course Objective:
To impart knowledge about the different therapeutic diets which can act as an aide for hastening rehabilitation process by gaining knowledge about how to plan a diet for a particular disease.

Course content:

UNIT I

1 .Nutritional care process: **[3 hrs]**
Overview of assessment, diagnosis, intervention, monitoring, evaluation and documentation; Patient care and counseling and screening.

2. Therapeutic modification of diet: **[3 hrs]**

Consistency, nutrients, texture; Modes of feeding- oral, enteral and parenteral; Routine hospital diets- liquid diet, normal/generic diet, soft diets.

UNIT II

1. Nutritional management of infections and fevers- **[4 hrs]**

Metabolic changes during infection, etiology, metabolic alterations and diet management in acute and chronic fever.

2. Etiology, symptoms, metabolic changes and diet management in disorders of gastrointestinal tract- **[5 hrs]**

Oesophagitis, peptic ulcer, duodenal ulcer, gastric ulcer, gastritis and gastric carcinoma, diarrohea, constipation, irregular bowel syndrome, maldigestion and malabsorbtion, diverticulitis, diverticulosis, chronic irritable bowel syndrome, chron's disease, ulcerative colitis.

UNIT III

1. Nutrition in Weight related disorders **[5 hrs]**

Risk factors and principle of nutritional therapy in underweight and overweight, weight imbalance, guidelines for calculating IBW.
Obesity- etiology, energy balance, metabolic abberations, clinical manifestations, consequences and management.
Under weight- etiology, metabolic abberations, clinical manifestations and dietary management.

2. Nutrition in Diabetes Mellitus- **[5 hrs]**

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Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices, complications during diabetes, types of insulin and their action, different artificial sweetners.

UNIT IV

1. Nutrition in cardiovascular disorders (atherosclerosis, coronary heart disease and hypertension): [5 hrs]

Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices.

2. Nutrition in Liver diseases and Gall Bladder (infective hepatitis, cirrhosis of liver, hepatic encephalopathy, jaundice, cholelithiasis, cholecystitis, pancreatitis) [5 hrs]

Etiology, Clinical Symptoms, medical nutrition therapy, Diet and feeding pattern.

UNIT V

1. **Nutrition in renal disorders (glomerulonephritis, nephrotic syndrome, acute and chronic renal failure): [5 hrs]**

   Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices.

2. **Nutrition in infection, burn, cancer and AIDS: [5 hrs]**

   Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices,

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To have a good understanding of the basic concepts of nutrition and how it is useful in rehabilitation of various diseases.
2. To gain knowledge of various types of diet devised for early recovery from various health problems.

Textbooks:

1. *ICMR.1994. Recommended Dietary Allowances for Indians. Indian counsil of Medical Research.*
2. *Khanna, Kumud; Gupta, S.; Passi, S.J.; Seth, R.; Mahna, R. and Puri, S. 1997. Text of Nutrition and Dietetics. Elite Publishing House Pvt. Ltd. 355p*
3. *Robinson, C.H. and Lawler, M.R.1982. Normal and Therapeutic Nutrition. Oxford & IBH.*
4. *William SR (1997). Nutrition and Diet Therapy. St. Louis: Times Mirror/ Mosby Publishing.*
5. *Bendich A and Derelbaum RJ (EDS) 2001. Primary and Secondary Preventive Nutrition. Totowa NJ : Human Press.*
6. *Mahan K and Escott- Stumps S. 2000. Krauses, Food Nutrition and Diet Therapy. USA: Saunders.*

Note: Latest edition of the suggested books are recommended.

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New course Added.

BPT Ist YEAR
Environmental Studies
(Minimum hours: Theory-40 hrs)

Course Code: BPT BPT109 **L-2, T-0, P-0, C-2**

Course Objective: *To create awareness among students about environment protection.*

Course Content:

Unit I (8 hrs)

Definition and Scope of environmental studies, multidisciplinary nature of environmental studies, Concept of sustainability & sustainable development.
Ecology and Environment: Concept of an Ecosystem-its structure and functions, Energy Flow in an Ecosystem, Food Chain, Food Web, Ecological Pyramid& Ecological succession, Study of following ecosystems: Forest Ecosystem, Grass land Ecosystem & Aquatic Ecosystem & Desert Ecosystem.

Unit II (8 hrs)

Natural Resources: Renewable & Non-Renewable resources; Land resources and land use change; Land degradation, Soil erosion & desertification. Deforestation: Causes & impacts due to mining, Dam building on forest biodiversity & tribal population. Energy Resources: Renewable & Non-Renewable resources, Energy scenario & use of alternate energy sources, Case studies.
Biodiversity: Hot Spots of Biodiversity in India and World, Conservation, Importance and Factors Responsible for Loss of Biodiversity, Bio geographical Classification of India

Unit III (8 hrs)

Environmental Pollutions: Types, Causes, Effects & control; Air, Water, soil & noise pollution, Nuclear hazards & human health risks, Solid waste Management; Control measures of urban & industrial wastes, pollution case studies

Unit IV (8 hrs)

Environmental policies & practices: Climate change & Global Warming (Greenhouse Effect),Ozone Layer -Its Depletion and Control Measures, Photochemical Smog, Acid Rain Environmental laws: Environment protection Act; air prevention & control of pollution act, Water Prevention & Control of Pollution Act, Wild Life Protection Act, Forest Conservation Acts, International Acts; Montreal & Kyoto Protocols & Convention on biological diversity, Nature reserves, tribal population & Rights & human wild life conflicts in Indian context

Unit V (8 hrs)

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Human Communities & Environment:
Human population growth; impacts on environment, human health & welfare, Resettlement & rehabilitation of projects affected person: A case study, Disaster Management; Earthquake, Floods & Droughts, Cyclones & Landslides, Environmental Movements; Chipko, Silent Valley, Vishnoi's of Rajasthan, Environmental Ethics; Role of Indian & other regions & culture in environmental conservation, Environmental communication & public awareness; Case studies.

Field Work:

1. Visit to an area to document environmental assets; river/forest/flora-fauna etc.
2. Visit to a local polluted site: urban/ rural/industrial/agricultural.
3. Study of common plants, insects, birds & basic principles of identification.
4. Study of simple ecosystem; pond, river etc.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able to understand / evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn help in sustainable development.

Text Books:

1. *"Environmental Chemistry", De, A. K., New Age Publishers Pvt. Ltd.*
2. *"Introduction to Environmental Engineering and Science", Masters, G. M., Prentice Hall India Pvt. Ltd.*
3. *"Fundamentals of Ecology", Odem, E. P., W. B. Sannders Co.*

Reference Books:

1. *"Biodiversity and Conservation", Bryant, P. J., Hypertext Book*
2. *"Textbook of Environment Studies", Tewari, Khulbe & Tewari, I.K. Publication*

Note: Latest editions of all the suggested books are recommended.

New Course Added

BPT IVth Year
MEDICAL ETHICS & EVIDENCE BASED PRACTICE
(Minimum hours: Theory-60 hrs; Tutorial – 20hrs)

Course Code: BPT411 **L-1 T- 0 P-0 C-1**

Course objective:
In this subject, the student will learn about the concept of evidence based physiotherapy, various steps involved in it, critically appraising the research articles and its practical applications in the management of individual patient care.

Course Content:

UNIT I:

1. HISTORY OF PHYSIOTHERAPY **[4 hrs]**

2. P.T. VALUES & ETHICS **[6 hrs]**

Ethical values and principles applied to moral issues and health care; Ethical principles related to physiotherapy, Scope of practice, enforcing standards in health profession-promoting quality care; Professional ethics in research, education and patient care delivery; Medical ethics in clinical decision-making.

UNIT II

1. ETHICS OF VARIOUS ORGANISATIONS **[6 hrs]**
World Confederation of Physical therapists (WCPT); Indian Association of Physiotherapists (IAP); Few international associations.

2. P.T. LAW & LEGAL CONCEPTS **[6 hrs]**
Medico legal aspects of physical therapy, liability, informed consent negligence, malpractice, licensure, consumer protection act.

UNIT III: EVIDENCE BASED PRACTICE ..... (32 hours)

1. INTRODUCTION **[3 hrs]**
Evidence based physiotherapy- Definition History of evidence based healthcare in general and physiotherapy in particular; Need for evidence based physiotherapy.

2. STEPS IN THE PRACTICE OF EBP **[2 hrs]**
Sackett's steps of evidence based practice

UNIT IV

1. LEVELS OF EVIDENCE AND ITS SIGNIFICANCE **[10 hrs]**

Systematic reviews and Meta-analysis; Randomized Controlled trials; Clinical practice guidelines; Cohort studies and cross sectional studies; Case reports and case series; Expert opinion

2. SOURCES OF EVIDENCE **[5 hrs]**

Pubmed , CINAHL, PEDro, Google Scholar, OVID, APTA's Hooked on Evidence

UNIT V

1. CRITICAL APPRAISAL OF EVIDENCE **[10 hrs]**

Process of critical appraisal; Critical appraisal of evidence about the effects of intervention (treatment); Critical appraisal of evidence about diagnostics tests; Critical appraisal of evidence about prognosis; Critical appraisal of clinical practice guidelines

2. BARRIERS AND LIMITATIONS OF EBP **[2 hrs]**

3. APPLICATION OF EVIDENCE INTO PRACTICE **[10 hrs]**

Practical application of evidence about the effects of intervention (treatment) in actual patient scenario with clinical case examples; Practical application of evidence about the diagnostic test for an individual patient, in actual patient scenario with clinical case examples; Practical application of evidence about the prognosis for an individual patient, in actual patient scenario with clinical case examples. Practical application of clinical practice guideline for an individual patient, in actual patient scenario with clinical case examples.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To know the basic ethical principles and moral values that has to be followed towards the health care profession.
2. To know the basics in evidence based practice in use for information in professional practice.

Textbooks:

1. Physical Therapy Ethics by Donald L.Gabard, Mike W.Martin, F.A. Davis, 2003.

Note: Latest edition of the suggested books are recommend

POST REVISION

B.P.T I[st] YEAR

FUNDAMENTALS OF EXERCISE THERAPY
Minimum Hours: Theory-80 Hrs.

Course Code: BPT105 **L-3, T-0, P-0, C-3**

Course objective:
In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

Course Contents:

UNIT I

1. **Terminologies and Basic Biomechanics:** Introduction to movements, Types of muscle contraction (isotonic -concentric, eccentric, isometric-static), Types of muscle work, Group action of muscle. **(2 hrs)**

2. **Kinematics of movement**: Joint movements, axis and plane. Direction of motion, Magnitude of motion, rate of motion. **(3 hrs)**

3. **Kinetics of movement**: Force- analysis of force (parallelogram law only), tension, gravity, center of gravity, line of gravity, base of support, Friction- types, Importance, effects and uses, Equilibrium, Fixation and stabilization, Potential energy, kinetic energy, work, power, speed, velocity, acceleration, mass, momentum, inertia, moment arm, torque. **(3 hrs)**

4. **Simple machines**: Lever- Definition, types and uses, anatomical levers, functional levers in physiotherapy, pulley- types and uses, mechanical advantage, anatomical pulley- Angle of pull, pendulum, Elasticity, springs—properties of springs, springs in series and parallel, Hooke's law, Pendulum. **(8 hrs)**

UNIT II

1. **Therapeutic gymnasium**: Orientation to various equipments used in exercise therapy department with its principles, effect and uses – pulleys(system of pulleys, double pulley block), springs(properties of springs, springs in series and parallel), finger ladder, theraband, dumbbells, weights, weight cuff, sand bags, therapeutic balls, parallel bars, shoulder wheel, shoulder ladder, pronator - supinator instrument, static cycle, rowing machine, ankle exerciser, balancing boards, springs. **(10 hrs)**

2. **Starting and derived positions**: All fundamental and derived positions with effect, uses and muscle work. **(3 hrs)**

3. **Classification of movements (active & passive) – Active movements**: **[16 hrs]**

Free exercise-Definition, classification, principles, technique, indication, contraindication, effects and uses.

Active assisted exercise: definition, principles, technique, indication, contraindication, effect and uses.

Assisted- resisted exercise: definition, principles, technique, indication, contraindication, effects and uses.

Passive movements:

Causes of immobility, Classification of Passive movements, and Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.

UNIT III

1. **Suspension Therapy**: **(5 hrs)**

Definition, Principles of suspension & Types of suspension therapy: axial, vertical,& pendular. Equipments & accessories, Indications & contraindications, Benefits of suspension therapy. Effects and uses & therapeutic application- Techniques of suspension therapy for upper limb & lower limb.

2. Measurement of Joint range: **(6 hrs)**

ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, limitations of goniometry, Techniques for measurement of ROM for all peripheral joints, spine & TMJ. End feel & its types.

UNIT IV

Hydrostatics and Hydrodynamics: **(5 hrs)**

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.

Equipements used in hydrotherapy : Whirlpool bath and Hubbard tank.

UNIT V

1. Relaxation: **(4 hrs)**

Definitions: Muscle Tone, Postural tone, Voluntary Movement. Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism. Indications of relaxation, Methods & techniques of relaxation-Principles & uses:

General, Local, Jacobson's, Mitchell's, additional methods. Postures to promote relaxation

2. Yoga: – **(10 hrs)**

Principles of yoga, basic yogic postures and their physiological effects. Yoga as applied to physiotherapy.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To describe the basic effects of exercise.
2. To measure the joint range of motion using Goniometer.
3. To describe the physiological and therapeutic effects of various movements.
4. To acquire the skills of application of various suspension therapy and its therapeutic uses and merits-demerits of the same.
5. To describe the physiological and therapeutic effects of various yogic exercises.

Text Books:

1. *Dena Gardiner K, Principles of Exercise Therapy, Macmillan.*
2. *Margaret Hollis Lab Exercise Therapy, Pub. Wiley.*
3. *Duffield, Hydrotherapy Baillière Tindall.*
4. *Cynthia Norkins, Measurement of Joint Motion F.A. Davis.*

Reference Books:

1. *Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques, Fa Davis.*

Note: Latest edition of the suggested books are recommended.

Registrar

PRE-REVISION

B.P.T I[st] YEAR
FUNDAMENTALS OF EXERCISE THERAPY
Minimum Hours: Theory-120 Hrs., Lab-80 Hrs.

Course Code: BPT105 **L-3, T-0, P-0, C-3**

In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

Section I

1. **Terminologies and Basic Biomechanics:** Introduction to movements, Types of muscle contraction (isotonic -concentric, eccentric, isometric-static), Types of muscle work, Group action of muscle.
2. **Kinematics of movement**: Joint movements, axis and plane. Direction of motion, Magnitude of motion, rate of motion.
3. **Kinetics of movement**: Force- analysis of force (parallelogram law only), tension, gravity, center of gravity, line of gravity, base of support, Friction- types, Importance, effects and uses, Equilibrium, Fixation and stabilization, Potential energy, kinetic energy, work, power, speed, velocity, acceleration, mass, momentum, inertia, moment arm, torque.
4. **Simple machines**: Lever- Definition, types and uses, anatomical levers, functional levers in physiotherapy, pulley- types and uses, mechanical advantage, anatomical pulley- Angle of pull, pendulum, Elasticity, springs—properties of springs, springs in series and parallel, Hooke's law, Pendulum.
5. **Therapeutic gymnasium**: Orientation to various equipments used in exercise therapy department with its principles, effect and uses – pulleys(system of pulleys, double pulley block), springs(properties of springs, springs in series and parallel), finger ladder, theraband, dumbbells, weights, weight cuff, sand bags, therapeutic balls, parallel bars, shoulder wheel, shoulder ladder, pronator - supinator instrument, static cycle, rowing machine, ankle exerciser, balancing boards, springs.

Section II

6. **Starting and derived positions**: All fundamental and derived positions with effect, uses and muscle work.

7. **Classification of movements (active & passive) –**

Active movements:

a. Free exercise-Definition, classification, principles, technique, indication, contraindication, effects and uses.

b. Active assisted exercise: definition, principles, technique, indication, contraindication, effects and uses.

c. Assisted- resisted exercise: definition, principles, technique, indication, contraindication, effects and uses.

d. Resisted exercise: Definition, classification, principles, technique, indication, contraindication, effects and uses. Difference of manual and mechanical resistance, Specific regimes- delormes, oxford, macqeen, circuit weight training, Types of isometrics.

Passive movements: Definition, classification, principles, technique, indication, contraindication, effects and uses.

8. **Suspension therapy:** Definition, point of suspension, types, indication, contraindication, limitations and benefits.

9. **Measurement of Joint range:** ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints.

10. Basic principles of **Hydrotherapy**.

11. **Yoga:** – Principles of yoga, basic yogic postures and their physiological effects. Rationale of yoga and physiotherapy. Yoga as applied to physiotherapy.

Text Books:

1. *Dena Gardiner K, Principles of Exercise Therapy, Macmillan.*
2. *Margaret Hollis Lab Exercise Therapy, Pub. Wiley.*
3. *Duffield, Hydrotherapy Baillière Tindall.*
4. *Cynthia Norkins, Measurement of Joint Motion F.A. Davis.*

Reference Books:

1. *Carolyn Kisner, Therapeutic Exercise. F a Davis Company*
2. *Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques, Fa Davis.*

Note: Latest edition of the suggested books are recommended.

POST REVISION

B.P.T-II[nd] Year

ELECTROTHERAPY & ACTINOTHERAPY
Minimum Hours: Theory-80 Hrs.

Course Code: BPT201 **L-3, T-0, P-0, C-3**

Course objective:

At the end of the course, the candidate will be able to describe the Physiological effects, Therapeutic uses, Merits/Demerits, Indications & Contraindications of various Low, Medium & High Frequency currents; physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco-therapeutic agents to be used for the application of Iontophoresis & Phonophoresis; acquire the skill of Application of the Electro therapy modes on models, for the purpose of treatment; acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

Course Contents:

UNIT I: Overview of basic electrical components, low frequency currents, medium frequency currents, heating modalities and nerve muscle physiology. **[3 hrs]**

UNIT II: LOW FREQUENCY CURRENTS:

1. HVPGS: Parameters & its uses **[3 hrs]**

2. Electro-Diagnosis: **[10 hrs]**
S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase. Outline of EMG & Nerve conduction velocity. Bio-feed back

3. Iontophoresis: **[5 hrs]**

Definition and principles & factors
Indications, effects, techniques, contraindications, precautions and Potential harmful effects. Techniques of Application of Iontophoresis, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would healing.

4. Types of Electrical Stimulators **[4 hrs]**

NMES- Construction component.. Neuro muscular diagnostic stimulator- construction, Components and working Principles

UNIT III: THERMAL THERAPY MODALITIES:

1. **Infrared Therapy:** **[4 hrs]**
   Types of generators, Therapeutic effects and uses, Techniques of application, dosimetry. Indications, contraindications precautions and Potential harmful effects.

UNIT IV: HIGH FREQUENCY CURRENTS:

1. **Ultrasound :** **[6 hrs]**
   Define Ultrasound, Frequency, Piezo Electric effects: Production of US, Continuous & Pulsed mode, Intensity, Thermal effects, Non- thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications, Contraindications, Dangers of Ultrasound & its Dosimetry. Application of U.S: Phonophorosis.

2. **SWD:** **[8 hrs]**
   Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications, Contraindications, Dangers & Dosimetry

3. **Microwave Diathermy:** **[3 hrs]**
   Production, principle, circuit diagram, Characteristics and therapeutic effects, Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry.

UNIT V:

1. **Laser:** **(6 hrs)**
   Introduction, principle of production, types of lasers, Physiological & therapeutic effects and potential harmful effects. Indication, contraindications, precautions, method of application, dosimetry

2. **Ultraviolet therapy:** **(8 hrs)**
   Production and types of generators. 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

3. **Care of wound:** Application of Electrical Agents like Therapeutic currents, Ultrasound, U.V.R. & laser, etc. **(2 hrs)**

4. **Combination Therapy:** **(2hrs)**
   Application and benefits

5. **Traction instruments:** Rationale, technique, parts, indications, contraindications, precautions of electric traction equipments, dosimetry. **(4 hrs)**

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To identify the modalities required for treating various conditions.
2. To know various methods of application of different modalities and care for patients.

Text books:

1. *Clayton's Electro Therapy, CBS Publishers & Distributors*
2. *Low & Reed, Electro therapy Explained , Butterworth-Heinemann Limited, 2000*

Reference Books:

1. *Nelson & Currier, Clinical Electro Therapy Appleton & Lange.*
2. *Kahn, Electro Therapy , Churchill Livingstone, 2000*

Note: Latest edition of the suggested books are recommended.

PRE REVISION

B.P.T-II[nd] Year
ELECTROTHERAPY & ACTINOTHERAPY
Minimum Hours: Theory-120 Hrs., Lab-80 Hrs.

Course Code: BPT201 **L-3, S-0, P-0, C-3**

Course Contents:

At the end of the course, the candidate will be able to describe the Physiological effects, Therapeutic uses, Merits/Demerits, Indications & Contraindications of various Low, Medium & High Frequency currents; physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco-therapeutic agents to be used for the application of Iontophoresis & Phonophoresis; acquire the skill of Application of the Electro therapy modes on models, for the purpose of treatment; acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

Section – I

A. LOW FREQUENCY CURRENTS:

1. **Nerve Muscle Physiology:** brief outline
2. **Faradic current:**
   - Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers
   - Techniques, parameters, Group muscle stimulation.
   - Faradic footbath, Faradism under pressure and muscle re-education.
   - Dosimetry
3. **Galvanic current:**
   - Indications, contraindications, precautions and therapeutic effects of stimulation.
   - Techniques, parameters, Dosimetry
4. **Sinusoidal Current & Diadynamic Current.**
5. **HVPGS:** Parameters & its uses
6. **Electro-Diagnosis:**
   - S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase
   - Outline of EMG & Nerve conduction velocity
   - Bio-feed back
7. **Iontophoresis:**
   - Definition and principles & factors
   - Indications, effects, techniques, contraindications, precautions and Potential harmful effects.

   Techniques of Application of Iontophoresis, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would healing.
8. **Micro Current**
9. **Types of Electrical Stimulators**
   a. NMES- Construction component.
   b. Neuro muscular diagnostic stimulator- construction component.
   c. Components and working Principles
10. **Principles of Application:** Electrode tissue interface, Tissue Impedance, Types of Electrode,

Size & Placement of Electrode – Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

11. TENS therapy:

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

B. MEDIUM FREQUENCY CURRENTS:

Definitions, effects, indications, techniques of application, contraindications

1. **Interferential therapy:**
   - Physiological, therapeutic effects & dangers, Indications & contra indications
   - Technique and method of applications, Dosimetry.
2. **Russian & Rebox type Current**

Section – II

C. 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

D. HIGH FREQUENCY CURRENTS:

1. **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.
2. **Microwave Diathermy:**
   - Characteristics and therapeutic effects.
   - Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry.

Section – III

E. ULTRASONIC THERAPY:

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

F. ACTINOTHERAPY:

1. **Laser:**
   - Introduction, effects and potential harmful effects.
   - Indication, contraindications, precautions, method of application, dosimetry
2. **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

G. Care of wound: Application of Electrical Agents like Therapeutic currents, Ultrasound, U.V.R. & LASER, etc.

H. Combination Therapy

I. Traction instruments: Rationale, technique, indications, contraindications, precautions of electric traction equipments.

Text books:

1. *Clayton's Electro Therapy, CBS Publishers & Distributors*
2. *Low & Read, Electro therapy Explained , Butterworth-Heinemann Limited, 2000*

Reference Books:

1. *Nelson & Currier, Clinical Electro Therapy Appleton & Lange.*
2. *Kahn, Electro Therapy , Churchill Livingstone, 2000*

Note: Latest edition of the suggested books are recommended.

POST REVISION

B.P.T-II[nd] Year

EXERCISE THERAPY
Minimum Hours: Theory-100 Hrs.

Course Code: BPT202 **L-3, T-0, P-0, C-3**
Course objective:

In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.
Course Contents:

UNIT I: Methods of Testing

1. Manual Muscle Testing: Concept, introduction, significance, Principles & Aims, Indications & Limitations, Grade systems; Techniques of MMT for group & individual muscles: Techniques of MMT for upper limb /lower limb /spine . **(6 hrs)**

2. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf. **(3 hrs)**
3. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length. **(3 hrs)**
4. Review of goniometry of upper limb, lower limb and trunk. **(2hrs)**

UNIT II:

1. **Resisted exercise:** **(6 hrs)**
Definition, classification, principles, technique, indication, contraindication, effects and uses. Difference of manual and mechanical resistance, Specific regimes- delormes, oxford, macqeen, circuit weight training, Types of isometrics.

2. **Muscle Stretching:** **(6 hrs)**
Stretching – Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions indications and contraindications of stretching, Techniques of stretching for group & individual muscles.

3. **Joint Mobility**: **(6 hrs)**
Joint ranges (outer, middle, inner ranges), stiffness, range and limitations .
Peripheral Joint Mobilization: Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

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UNIT III:

1. **Massage:** **(6 hrs)**
Definition & principle of Massage, Techniques, Indications and Contraindications, Physiological Effects of Massage on Various Body Systems, Types of massage

2. **Re-education of muscles:** **(6 hrs)**
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

3. **Proprioceptive Neuromuscular Facilitation** (PNF) – **(8 hrs)**
Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonal patterns of movement: upper limb, lower limb, Procedure: components of PNF, Techniques of facilitation, Mobility: Contract relax, Hold relax, Rhythmic initiation, Strengthening: Slow reversals, repeated contractions, timing for emphasis, Stability: Alternating isometric, rhythmic stabilization, Skill: timing for emphasis, resisted progression, Endurance: slow reversals, agonist reversal. Indications & contraindications.

4. **Functional Re-education:** **(6 hrs)**
Functional motor skills, e-Motor skills to function independently in ADLs
Mobility, Bed / Wheel chair mobility, ambulation
Application of mat exercises Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

5. **Individual and Group Exercises:** **(1 hrs)**
Advantages and Disadvantages, Organisation of Group exercises- Indication, contraindication, types.

6. **Principles of Home programme & Ergonomic advise** **(1 hrs)**

UNIT IV:

1. **Balance & Co-ordination: its re-education** **(8 hrs)**

Balance: Definition, Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal and biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining.
Co-ordination Exercise: Definitions: Co-ordination, Inco-ordination, Causes for Inco- ordination, & Test for co-ordination: equilibrium test, non equilibrium test Principles of co-ordination exercise Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

2.Walking Aids and crutch walking: Types, Measurements, Prescription,Training & Evaluation:

Crutches, Canes, frame.

Crutch Walking: Description of crutch - components, classification, Good crutch, measurements, Crutch use- Preparation, Training, counselling., Crutch gaits- types, & significance, Crutch complications- Palsy, dependency etc. **(6 hrs)**

3. Posture: **(5hrs)**

Definition, Ideal & impaired postures, biomechanical mechanism of posture, types of faulty Posture, Principles of re-education: corrective methods and techniques, Patient education.

UNIT V:

1. **Hydrotherapy & Aquatic exercises:** **(4 hrs)**

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

2. **Aerobic Exercise:** **(5 hrs)**

Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

3. **Techniques to improve Pulmonary function:** **(8 hrs)**

Breathing exercises-Goals, Types– Inspiratory, Expiratory, Segmental. Forced expiratory Techniques-Huffing/ Coughing, Incentive Spirometry, Peak flow meter. Postural drainage.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To use & describe advanced therapeutic exercises used for devising rehabilitation protocol for various conditions.
2. To measure the joint range of motion using Goniometer.
3. To be able to perform various types of stretching of upper limb & lower limb, massage techniques, balance and coordination exercises.
4. To acquire the skills of application of various techniques to improve pulmonary function as well as to regain maximum strength of muscles, its therapeutic uses and merits-demerits of the same.
5. To describe various assistive aids and gait training.

Text Books:

1. *Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations and Techniques*
2. *Williams and Wilkins, Therapeutic Exercise, Basmajian.*
3. *Hollis, Lab Exercise Therapy, Blackwell Scientific Publications.*
4. *Gardiner, Principle of Exercise Therapy, C.B.S. Delhi.*
5. *Norkins & White F.A. Davis, Measurement of Joint Motion: A Guide to Goniometry*
6. *Wood - W.B. Saunders, Beard's Massage.*

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Reference Books:

1. *Butterworth Heinmann, Hydrotherapy, Principles and Practices , Campion .*
2. *Kendal , Muscle testing and functions , Williams & Wilkins.*
3. *Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunder.*
4. *Edmond Mosby Manipulation and Mobilizations extremities and spinal techniques,.*
5. *Bates and Hanson , Aquatic Exercise Therapy , W.B. Saunders.*
6. *Wadsworth Lippincott Manual examination and treatment of spine and extremities.*
7. *Margarett Hollis, Massage for therapist: Margarett Hollis*

Note: Latest edition of the suggested books are recommended.

PRE REVISION.

B.P.T-II[nd] Year
EXERCISE THERAPY
Minimum Hours: Theory-120 Hrs., Lab-100 Hrs.

Course Code: BPT202 **L-3, S-0, P-0, C-3**
Course Contents:

In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

Section – I

1. Methods of Testing

a) Functional tests

b) Tests for neuromuscular efficiency

- **Manual Muscle Testing**: Concept, introduction, significance, Principles & Aims, Indications & Limitations, Grade systems; Techniques of MMT for group & individual muscles: Techniques of MMT for upper limb /lower limb /spine
- Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf
- Static power Test
- Dynamic power Test
- Endurance test
- Speed test

c) Measurement of Limb Length: true limb length, apparent limb length, segmental limb length

2. Goniometry:

- Define, Indications, contraindications, uses
- Different techniques of goniometry
- Measurement of various joints range in normal and disease condition

3. **Passive movements**: Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.

4. Active movements:

- Free, assisted and resisted
- Indication, contraindications, advantages and techniques of various types of active exercises.
- Clinical methods of strengthening of various muscle groups.

Section – II

5. Muscle Stretching:

Stretching – Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions indications and contraindications of stretching, Techniques of stretching for group & individual muscles

6. **Relaxation**: Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchell's, additional methods.

7. Joint Mobility: Joint ranges (outer, middle, inner ranges), stiffness, range and limitations
Peripheral Joint Mobilization: Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

8. Massage:

- Defination of Massage
- Techniques, Indications and Contraindications.
- Physiological Effects of Massage on Various Body System
- Types of massage

9. 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

10. Proprioceptive Neuromuscular Facilitation (PNF) - Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb, Procedure: components of PNF, Techniques of facilitation, Mobility: Contract relax, Hold relax, Rhythmic initiation, Strengthening: Slow reversals, repeated contractions, timing for emphasis, Stability: Alternating isometric, rhythmic stabilization, Skill: timing for emphasis, resisted progression, Endurance: slow reversals, agonist reversal. Indications & contraindications.

11. Functional Re-education:

- Functional motor skills, e-Motor skills to function independently in ADL
- Mobility, Bed / Wheel chair mobility, ambulation
- Application of mat exercises Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

12. Balance & Co-ordination: its re-education

- **Balance:** Definition, Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal and biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining.

- **Co-ordination Exercise:** Definitions: Co-ordination, Inco-ordination, Causes for Inco-ordination, & Test for co-ordination: equilibrium test, non equilibrium test Principles of co-ordination exercise Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

13. **Posture**: Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.

Section – III

14. **Walking Aids and crutch walking**: Types, Measurements, Prescription, Training & Evaluation: Crutches, Canes, frame, wheel chair

Crutch Walking:

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

15. **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

16. **Hydrotherapy:**

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

17. **Suspension Therapy**:

- Definition, Principles of suspension & Types of suspension therapy: axial, vertical, pendular
- Equipments & accessories, Indications & contraindications, Benefits of suspension therapy
- Effects and uses & therapeutic application- Techniques of suspension therapy for upper limb

& lower limb

18. **Aerobic Exercise:** Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.
19. **Aquatic exercises**

20. **Techniques to improve Pulmonary function:**
    a) Breathing exercises-Goals, Types– Inspiratory, Expiratory, Segmental. Forced expiratory Techniques-Huffing/ Coughing, Incentive Spirometry, Peak flow meter
    b) Postural drainage
    c) Postures to promote relaxation

21. **Individual and Group Exercises:** Advantages and Disadvantages, Organisation of Group exercises- Indication, contraindication, types.

22. **Principles of Home programme & Ergonomic advise**

Text Books:

1. *Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations and Techniques*
2. *Williams and Wilkins, Therapeutic Exercise, Basmajian.*
3. *Hollis, Lab Exercise Therapy, Blackwell Scientific Publications.*
4. *Gardiner, Principle of Exercise Therapy, C.B.S. Delhi.*
5. *Norkins & White F.A. Davis, Measurement of Joint Motion: A Guide to Goniometry*
6. *Wood - W.B. Saunders, Beard's Massage.*

Reference Books:

1. *Butterworth Heinmann, Hydrotherapy, Principles and Practices , Campion .*
2. *Kendal , Muscle testing and functions , Williams & Wilkins.*
3. *Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunder.*
4. *Edmond Mosby Manipulation and Mobilizations extremities and spinal techniques,.*
5. *Bates and Hanson , Aquatic Exercise Therapy , W.B. Saunders.*
6. *Wadsworth Lippincott Manual examination and treatment of spine and extremities.*
7. *Margarett Hollis, Massage for therapist: Margarett Hollis*

Note: Latest edition of the suggested books are recommended.

Post Revision

B.P.T-II[nd] Year
PHARMACOLOGY
Minimum Hrs: Theory-90 Hrs.

Course Code: BPT205 **L-3, T-0, P-0, C-3**

Course objective:

At the end of the course the candidate will be able to describe Pharmacological effects of commonly used drugs by patients referred for Physio therapy; list their adverse reactions, precautions to be taken & contra-indications, formulation & route of administration ; identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-a-versa ; indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs. Get the awareness of other essential & commonly used drugs by patients, the basis for their use & common as well as serious adverse reactions.

Course Contents:

UNIT I:

General pharmacology **[8 hrs]**

Drug Pharmaco-kinetics, Pharmacodynamics, Factors modifying drug effects, Sources & routes of drugs administration. Adverse effects.

UNIT II:

1. **Drug activity on CNS** **[8 hrs]**

Introduction, General anaesthetic, Local anaesthetic; Alcohols, Sedatives & Hypnotics; Anti-Convulsants; Analgesics & Antipyretics-specially Gout & R.A.; Drug therapy in Parkinsonism

2. **Drugs acting on peripheral nervous system** **[3 hrs]**

Adrenergic
Cholinergic

UNIT III:

1. **Skeletal muscle relaxants** **[4 hrs]**
2. **Drugs acting on CVS** **[8 hrs]**

Anti-Hypertensive drugs. Shock & Homeostasis, Angina, Congestive Heart Failure

3. **Drugs acting on Respiratory system-** **[6hrs]**

For Upper Respiratory Tract infections-sinusitis, cough, laryngitis, Pharyngitis, For Bronchial asthma, For COPD- effects of prolonged drug administration.

UNIT IV:

1. Insulin & oral anti-diabetic drugs **[6 hrs]**
2. Antibiotics: classification, pharmacokinetics, uses, side effects & adverse effects **[8 hrs]**
3. Analgesics & antipyretics **[6 hrs]**

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4. **Chemotherapy** **[8 hrs]**
General principles, Sulfa drugs in urinary tract infection Tetra/chloro penicillin, Cephalosporin, Aminoglycosides, Macrolides, Anti Tuberculosis, Anti-leprosy

UNIT V:

1. **Endocrine:** **[8 hrs]**
Introduction Thyroid & Antithyroid, Estrogen + Progesterone, Steroids + Anabolic Steroids
2. **Haematinics, Vitamin B; Iron;** **[3 hrs]**
3. **Vaccines & Sera** **[4 hrs]**
4. **Vitamin D, Calcium; Phosphorus, Magnesium** **[4 hrs]**
5. **Anti emetics** **[3 hrs]**

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To have an idea about the basics of medicines.
2. To know the mechanism of action of drugs for various common diseases.
3. To know the therapeutic effects of various drugs.
4. To know the adverse effects of various drugs.

Text Books/Refrence Books :

1. *Gaddum, Pharmacology, Gaddum's Pharmacology*
2. *Dr.R.S. Satoskar & Dr. S.D. Bhandarkar, Pharmacology & Pharmacotherapeutics Revised 19 th Edition 2005 by Popular Prakashan.*
3. *Krantx, & Carr, Pharmacology principle of Medical practice, Williams & Wilkins.*
4. *Goodman Pharmacological basis of Therapeutics, L. S. Gilman A*
5. *Dr. K.D. Tripathi, Jaypee ,Essential of Medical Pharmacology , Brothers Medical Publishers*

Note: Latest edition of the suggested books are recommended.

PRE REVISION

B.P.T-II[nd] Year
PHARMACOLOGY
Minimum Hours: Theory-90 Hrs.

Course Code: BPT205 **L-3, S-0, P-0, C-3**

Course Contents:

At the end of the course the candidate will be able to describe Pharmacological effects of commonly used drugs by patients referred for Physio therapy; list their adverse reactions, precautions to be taken & contra-indications, formulation & route of administration ; identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-a-versa ; indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs. Get the awareness of other essential & commonly used drugs by patients, the basis for their use & common as well as serious adverse reactions.

Must Know-

- Drugs described in topics 2 to 9;
- Pharmacological effects & mechanism, Formulation, Route of administration, salient Pharmaco-kinetic features
- Adverse Reactions
- Precautions & contra-indications

Desirable-

- Major group of drugs described in topics 10, 11 & 12
- Basis of use in indicated conditions
- Common & serious Adverse Reactions

Topics

1. **General pharmacology**
   - Drug Pharmaco-kinetics,
   - Pharmacodynamics, Factors modifying drug effects,
   - Sources & routes of drugs administration
2. **Drug activity of CNS**
   - Introduction
   - General anaesthetic, Local anaesthetic
   - Alcohols, Sedatives & Hypnotics
   - Anti- Convulsants
   - Analgesics & Antipyretics-specially Gout & R.A.
3. **Drugs acting on peripheral nervous system**
   - Adrenergic
   - Cholinergic
4. **Drug therapy in Parkinsonism**
5. **Skeletal muscle relaxants**

6. **Drugs acting on CVS**
    - Anti-Hypertensive drugs.
    - Shock & Homeostasis
    - Angina
    - Congestive Heart Failure

7. **Drugs acting on Respiratory system-** For Upper Respiratory Tract infections-sinusitis, cough, laryngitis, Pharyngitis, For Bronchial asthma, For COPD- effects of prolonged drug administration.
8. **Insulin & oral anti-diabetic drugs**
9. **Chemotherapy**
    - General principles
    - Sulfa drugs in urinary tract infection Tetra/chloro penicillin, Cephalosporin, Aminoglycosides, Macrolides
    - Anti Tuberculosis, Anti-leprosy

10. **Endocrine:**
    - Introduction Thyroid & Antithyroid
    - Estrogen + Progesterone
    - Steroids + Anabolic Steroids

11. **Haematinics, Vitamin B; Iron;**
12. **Vaccines & Sera**
13. **Vitamin D, Calcium; Phosphorus, Magnesium**

Text Books/Refrence Books :

1. *Gaddum, Pharmacology, Gaddum's Pharmacology*
2. *Dr.R.S. Satoskar & Dr. S.D. Bhandarkar, Pharmacology & Pharmacotherapeutics Revised 19 th Edition 2005 by Popular Prakashan.*
3. *Krantx, & Carr, Pharmacology principle of Medical practice, Williams & Wilkins.*
4. *Goodman Pharmacological basis of Therapeutics, L. S. Gilman A*
5. *Dr. K.D. Tripathi, Jaypee ,Essential of Medical Pharmacology , Brothers Medical Publishers*

Note: Latest edition of the suggested books are recommended.

POST REVISION

B.P.T-III[rd] Yr
SURGERY
Minimum Hours: Theory-90 Hrs.

Course Code: BPT301 **L-3, T-0, P-0, C-3**

Course objectives:

At the end of course should have a broad understanding about common surgical procedures that they would be handing as a physiotherapist. They should have a brief idea about etiology, pathology and type and degree of disability the patient will have as a result of the disease and surgical procedure, so that he/she as a Physiotherapist with surgeon should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

Course Contents:

UNIT I: General Surgery **[10 hrs]**

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management; Nutrition in the surgical patient. Hemorrhage, Shock.
2. Reasons for Surgery: Types of anaesthesia and Incisons; Clips Ligatures and Sutures; Overview of Drainage systems and tubes used in Surgery.
3. Inflammation – acute & chronic-signs, symptoms, complications & management
4. Wounds / ulcers – classification, healing process, management
5. Mastectomy – types, complications & management
6. Amputation – surgical procedures and considerations of amputation.

UNIT II: Neuro Surgery **[8 hrs]**

1. Head Injury – surgical management
2. Surgical management of Intra cranial & spinal tumors
3. Surgeries of Head & neck in neurosurgical conditions & post operative care
4. Congenital & childhood disorders of nervous system like Hydrocephalus, spina bifida etc. clinical features, surgical management & post operative care

UNIT III:

1. **Thoracic surgeries:** **[6 hrs]**
   Use of mechanical breathing Ventilators in brief. Pulmonary function tests, Investigations of lung disease, Causes, clinical presentation, Diagnosis and treatment of Chest injuries. Definition, Indications, Physiological changes, surgical procedure and Complication of Lung surgeries: Thoracotomy, Pnumonectomy, Lobectomy, segmentectomy, Thoracoplasty, leurectomy, Pleurodesis and Decortication of the Lung.

2. **Cardiac surgeries:** **[8 hrs]**
   Investigation of patient undergoing cardiac surgery. Indications, Physiological changes, procedure and Complications of heart surgeries: Extra cardiac Operations, Closed Heart surgery, Open Heart

Maharaja Ganga Singh University, Bikaner Registrar

Surgery, great vessels surgery, surgery for congenital heart disease. Transplant surgery: Heart, Lung. Cardiac arrest and its management. Introduction of Cardio-Pulmonary Bypass Machine in brief.

3. Diseases of the Arteries and Veins: **[5 hrs]**

Definition, Etiology, Clinical features, signs and symptoms, complications, management and surgical treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.

UNIT IV:

1. Abdominal surgeries: **[5 hrs]**

Definition, Indication, Incision, Physiological changes and Complications following Common operations , Abdominal incision , Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, oesophegeal disorder, Neprectomy, Prostectomy.

2. E.N.T. Surgery **[5 hrs]**

Sinusitis, Rhinitis, Acute and Chronic Otitis; Upper respiratory tract surgery & post operative care

Tracheostomy - indications. surgical approach & management; Surgical procedures in VIIth nerve palsy

3. Plastic Surgery **[5 hrs]**

1. Burns:

Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management

2. Skin grafts & flaps - Types, indications with special emphasis to burns, wounds, ulcers

3. Tendon transfers, with special emphasis to hand, foot & facial paralysis,

4. Keloid & Hypertrophied scar management

UNIT V:

OBS & Gynec:

1. Puberty: Dynamics. **[1 hrs]**

2. Pelvic floor muscles **[1 hr.]**

3. Menstrual Cycle: **[4 hrs]**

Physiology, Hormonal regulation, abnormalities, disorders and common problems of menstruation.

4. Pre, Peri & Post Menopause: **[3 hrs]**

Physiology, Consequence, complications & management of Menopause.

5. Pregnancy: **[5 hrs]**

Diagnosis, fertilization, development of the fetus,. Normal, abnormal and multiple gestation , Physiological changes , common complication- PIH, eclampcia, diabetes , hepatitis, german measles , TORCH infection , abortion, antenatal care.

6. Labour: **[3 hrs]**

Normal events of Ist ,IInd and IIrd stages of labour. Complication during labour & management.

Assisted delivery: Episiotomy, Forceps delivery, caesarian section

7. Postnatal phase: **[3 hrs]**
Puerperium, Common complications & Management, Lactation, Complications of repeated child bearing with small gaps.

8. Family planning : Method of Contraception, Medical Termination of pregnancy (MTP) **[3 hrs]**

9. Dysfunctions & Disease: **[4 hrs]**
Prolapse & displacement - Uterine prolapse, Cystocoele, Rectocoele, Enterocoele ,Incontinence - types, causes , assessment, management. Infections of female genital tract including sexually transmitted Diseases & PID. Neoplasm of Female reproductive organs & its management.

10. Gynaecological Surgeries : **[3 hrs]**
Definition, Indications and Management of the following surgical procedures – Hysterectomy, Hysterosalpingography, Dilatation and Curettage, Laproscopy, Colposopy

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To know about various incisions used in different surgeries and their post operative complications
2. To plan the intervention for post operative complications.
3. Evaluation and assessment of pelvic muscles.
4. The etiology, pathophysiology, signs and symptoms, clinical evaluation, management of the various gynecological condition and important surgical procedures.
5. Detection of pregnancy various stages of labour its complications.
6. Termination of pregnancy and family planning.
7. Importance of physiotherapy in antenatal and post natal period.
8. Evaluation and assessment of female. Etiology, signs and symptoms, management of various female disorders.

Text Books:

1. *Dutta, Text book of Gynecology, New Central Book Agency*
2. *Dutta Text book of Obstetrics, New Central Book Agency*
3. *Manipal Manual of Surgery by Shenoy K. Rajgopal*
4. *A Concise Textbook of Surgery by Das S.*
5. *Cash Textbook Of Heart & Vascular Disorders For Physiotherapists BY P.A. Downie*

Reference Books:

1. *Bailey & Love's, Short Practice of Under Graduate Surgery, CRC Press, Taylor and Francis Group 26st edition*
2. *Madhuri – Textbook of physiotherapy for Cardiorespiratory cardiac surgery and Thoracic surgery conditions*
3. *Hough – Physiotherapy in Respiratory Care P.A Downie - Cash's Textbook of heart, chest & vascular disease for physiotherapist.*

Note: Latest edition of the suggested books are recommended.

PRE REVISION

B.P.T-III[rd] Yr
SURGERY
Minimum Hours: Theory-90 Hrs.

Course Code: BPT301 **L-3, S-0, P-0, C-3**

Course Contents:

At the end of course should have a broad understanding about common medical diseases, which they would be handing as a physiotherapist. They should have a brief idea about etiology, pathology and type and degree of disability the patient will have as a result of the disease, so that he/she as a Physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

Section I

A. General Surgery

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management; Nutrition in the surgical patient. Hemorrhage, Shock.
2. **Reasons for Surgery:** Types of anaesthesia and Incisons; Clips Ligatures and Sutures; Overview of Drainage systems and tubes used in Surgery.
3. Inflammation - acute & chronic-signs, symptoms, complications & management
4. Wounds / ulcers - classification, healing process, management
5. Common abdominal surgeries for G.I. tract, Genito-urinary system Scar during surgical approach through abdominal wall. Scar management in brief
6. Radical mastectomy - complications & management
7. Amputation - types, sites, complications & management

B. Neuro Surgery

1. Head Injury – management
2. Intra cranial & spinal tumors
3. Surgeries of Head & neck in neurosurgical conditions & post operative care
4. Congenital & childhood disorders of nervous system like Hydrocephalus, spina bifida etc. clinical features, surgical management & post operative care

C. Thoracic surgeries: Use of mechanical breathing Ventilators in brief. Pulmonary function tests, Investigations of lung disease, Causes, clinical presentation, Diagnosis and treatment of Chest injuries. Definition, Indications, Physiological changes, procedure and Complication of Lung surgeries: Thoracotomy, Pnumonectomy, Lobectomy, segmentectomy, Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung.

D. Cardiac surgeries: Investigation of patient undergoing cardiac surgery. Indications, Physiological changes, procedure and Complications of heart surgeries: Extra cardiac Operations, Closed Heart surgery, Open Heart Surgery, great vessels surgery, surgery for congenital heart disease. Transplant surgery: Heart, Lung. Cardiac arrest and its management. Introduction of Cardio-Pulmonary Bypass Machine in brief.

E. Diseases of the Arteries and Veins: Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.

F. Abdominal surgeries: Definition, Indication, Incision, Physiological changes and Complications following Common operations , Abdominal incision , Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, oesophegeal disorder, Neprectomy, Prostectomy.

G. Burns : Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps.

H. E.N.T. Surgery

1. Sinusitis, Rhinitis, Acute and Chronic Otitis
2. Upper respiratory tract surgery & post operative care
3. Tracheostomy - indications. surgical approach & management
4. Surgical procedures in VIIth nerve palsy

I. Plastic Surgery

1. Skin grafts & flaps - Types, indications with special emphasis to burns, wounds, ulcers
2. Tendon transfers, with special emphasis to hand, foot & facial paralysis,
3. Keloid & Hypertrophied scar management

Section II- OBS & GYNAE

A. **Puberty:** Dynamics.

B. **Menstrual Cycle**: Physiology, Hormonal regulation, abnormalities, disorders and common problems of menstruation.

C. **Pregnancy**: Diagnosis, fertilization, development of the fetus,. Normal, abnormal and multiple gestation , Physiological changes , common complication- PIH, eclampcia, diabetes , hepatitis, german measles , TORCH infection , abortion, antenatal care.

D. **Labour:** Normal events of Ist ,IInd and IIrd stages of labour. Complication during labour & management. Assisted delivery: Episiotomy, Forceps delivery, caesarian section

E. **Postnatal phase:** Puerperium, Common complications & Management, Lactation, Complications of repeated child bearing with small gaps.

F. **Family planning** : Method of Contraception, Medical Termination of pregnancy (MTP)

G. **Dysfunctions & Disease:** Prolapse & displacement - Uterine prolapse, Cystocoele, Rectocoele, Enterocoele ,Incontinence -types, causes , assessment, management. Infections of female genital tract including sexually transmitted Diseases & PID.

H. **Gynaecological Surgeries :** Definition, Indications and Management of the following surgical procedures – Hysterectomy, Hysterosalpingography, Dilatation and Curettage, Laproscopy, Colposopy

I. **Pre, Peri & Post Menopause:** Physiology, Consequence, complications & management of Menopause. Neoplasm of Female reproductive organs & its management.

Text Books:

1. *Dutta, Text book of Gynecology, New Central Book Agency*
2. *Dutta Text book of Obstetrics, New Central Book Agency*

Reference Books:

1. *Bailey & Love's, Short Practice of Under Graduate Surgery, CRC Press, Taylor and Francis Group 26st edition*
2. *Madhuri – Textbook of physiotherapy for Cardiorespiratory cardiac surgery and Thoracic surgery conditions*
3. *Hough – Physiotherapy in Respiratory Care P.A Downie - Cash's Textbook of heart, chest & vascular disease for physiotherapist*

Note: Latest edition of the suggested books are recommended.

POST REVISION

B.P.T-III[rd] Year

CLINICAL ORTHOPAEDICS

Minimum Hours: Theory-120 Hrs

Course Code BPT306 **L-3, T-0, P-0, C-3**

Course objective:

At the end of syllabus and instructional course and demonstrations, the student will be able to understand orthopaedic conditions causing disability.

Course Contents:

UNIT I

1. **Introduction to Orthopaedics**: Introduction to orthopaedics and its terminology. Clinical examination in an Orthopaedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics. **[8 hrs]**

2. **Fractures and Dislocations:**
   Fracture - definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction (open/closed, immobilization etc). Subluxation / dislocations – definition, signs and symptoms, management (conservative and operative). **[4 hrs]**

3. **Upper Limb Fractures:** **[10 hrs]**
   Enumerate major long bone fractures and joint injuries.
   Briefly describe their clinical features, complications and principles of management.

4. **Lower Limb Fractures:** **[10 hrs]**
   Enumerate major long bone fractures and joint injuries.
   Briefly describe their clinical features, principles of management and complication.

5. **Spinal Fractures:** **[12 hrs]**
   Classification system (Three column concept, major and minor fracture, stable and unstable fracture).Fracture of cervical spine: various mechanisms of injury, clinical features, complications of spinal injuries and principles of management. Clay shoveller's fracture. Hangman's fracture. Fracture ofatlas. Jefferson fracture (fracture of the ring of c1). Fracture of the dens.Fracture of thoracic and lumbar regions - mechanism of injury, clinical features, management. Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

6. **Dislocations**: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of upper limb and lower limb.. **[3 hrs]**

UNIT II

1. **Metabolic Bone Diseases:** Osteoporosis. Rickets. Osteomalacia. **[4 hrs]**

2. **Inflammatory and Degenerative Conditions**: Causes, clinical features, complications, deformities, radiological features and management of the following : Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis. Charcot's Disease. Gouty arthritis. Psoriatic arthritis. Poliomyelitis **[4 hrs]**

3. **Cervical and Lumbar Pathology** :
Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : Prolapsed interverbral disc (PIVD), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra. **[10 hrs]**

UNIT I1I

1. **Bone & Joint Infections**: Outline the etiology, clinical features, management and complications of septic arthritis , osteomyelitis, Tuberculosis (including spinal T.B.). **[4 hrs]**

2. **Bone Tumors:** Classify and Outline the Clinical Features, management and complications of the following benign / malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiplemyeloma. **[3 hrs]**

3. **Deformities –** **[6 hrs]**
Clinical features, complications, medical and surgical management of the following
a. Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Limb deficiencies- Osteogenesis imperfecta(fragile ossium). Cervical rib.
b. Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe.
Metatarsalgia

4. **Hand Injuries**: Outline of clinical features, complications and management of: Flexor and extensor tendon injuries. Crush injury of Hand. Burn injuries of hand. **[4 hrs]**

UNIT IV

1. **Amputations:** Definition, principles, levels of amputation of both lower and upper limbs, indications, complications. **[4 hrs]**

2. **Orthopedics Surgery:** Principles of Operative Treatment: List indications, contraindication and briefly outline principles of: Athrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon – Transfers and Arthroscopy. **[6 hrs]**

UNIT V

Soft Tissue Injuries : **[28 hrs]**

Define sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, management of the following regional conditions

Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis & tendon rupture. Bicipital Tendinitis & rupture. Subacromial Bursitis, Pectorals tendon rupture. **(5 hrs)**

Elbow: Olecranon Bursitis (student's elbow), tennis elbow, golfers elbow. Strains- biceps & triceps. **(2 hrs)**

Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. **(5 hrs)**

Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome, Strains- quadriceps, hamstrings. **(4 hrs)**

Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome), Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. **(8 hrs)**

Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome.

Achilles Tendinitis. Strains: Calf muscles. **(4 hrs)**

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To understand causes mechanism of injuries for traumatic conditions and also the intervention for those conditions.
2. To identify the problems and their clinical signs and correlate with the other findings.
3. To understand and identify various fractures and dislocations of upper limb, lower limb and spine.
4. To understand and identify various musculoskeletal conditions and deformities.
5. To enhance complete knowledge in clinical orthopaedics.

Text Books:

1. *Wilson Watson – Zones, Fractures and Joint Injuries, Churchill Livingstone.*
2. *Mcrae Clinical Orthopaedic Examination , Churchill Livingstone.*
3. *Apley Physical Examination in Orthopaedics , Butterworth Heinmann.*
4. *Essentials OF Orthopaedics Applied Physiotherapy by Joshi Jayant*
5. *Essentials of Orthopaedics For Physiotherapists by Ebnezar John*
6. *Essentials of Orthopaedics by Maheshwari J.*

Registrar

Reference Book:

1. *Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins*
2. *Pandey & Pandey ,Clinical Orthopaedics Diagnosis ,Jaypee Brothers.*
3. *Orthopaedic physical therapy by Brtzman Brent*
4. *Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists by Downie A. Patricia*
5. *Orthopaedic Physical Assessment by Magee J. David*
6. *Orthopaedic Physical Therapy by Donatelli A Robert*

Note: Latest edition of the suggested books are recommended.

PRE REVISION

B.P.T-III[rd] Year
CLINICAL ORTHOPAEDICS
Minimum Hours: Theory-120 Hrs. Lab-40 Hrs.

Course Code BPT306 **L-3, S-0, P-0, C-3**

Course Contents:

At the end of syllabus and instructional course and demonstrations, the student will be able to understand orthopaedic conditions causing disability and manage them by physiotherapy point of view.

1. **Introduction to Orthopaedics**: Introduction to orthopaedics and its terminology. Clinical examination in an Orthopaedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics.
2. **Fractures and Dislocations:**
   Fracture - definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction (open/closed, immobilization etc). Subluxation / dislocations – definition, signs and symptoms, management (conservative and operative).
3. **Upper Limb Fractures & Dislocations:**
   Enumerate major long bone fractures and joint injuries.
   Briefly describe their clinical features, complications and principles of management.
4. **Lower Limb Fractures & Dislocations**:
   Enumerate major long bone fractures and joint injuries.
   Briefly describe their clinical features, principles of management and complication.
5. **Spinal Fractures:** Classification system (Three column concept, major and minor fracture, stable and unstable fracture).
   Fracture of cervical spine: various mechanisms of injury, clinical features, complications of spinal injuries and principles of management. Clay shoveller's fracture. Hangman's fracture. Fracture of atlas. Jefferson fracture (fracture of the ring of c1). Fracture of the dens.
   Fracture of thoracic and lumbar regions - mechanism of injury, clinical features, management. Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.
6. **Recurrent Dislocations**: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.
7. **Soft Tissue Injuries** - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements-conservative and surgical of the following soft tissue injuries: Tennis elbow, Golfer's elbow, Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle , Plantar Fascitis. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals.
8. **Metabolic Bone Diseases:** Osteoporosis. Rickets. Osteomalacia.

9. **Inflammatory and Degenerative Conditions**: Causes, clinical features, complications, deformities, radiological features and management of the following : Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis. Charcot's Disease. Gouty arthritis. Psoriatic arthritis. Poliomyelitis

10. **Cervical and Lumbar Pathology** : Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : Prolapsed interverbral disc (PIVD), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.

11. **Bone & Joint Infections**: Outline the etiology, clinical features, management and complications of septic arthritis , osteomyelitis, Tuberculosis (including spinal T.B.).

12. **Bone Tumors:** Classify and Outline the Clinical Features, management and complications of the following benign / malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiplemyeloma.

13. **Deformities** - clinical features, complications, medical and surgical management of the following Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus.
Limb deficiencies- Osteogenesis imperfecta(fragile ossium). Cervical rib.
Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia

15. **Peripheral Nerve Injuries**: Outline the clinical features and management of:
    - Radial, Median and Ulnar Nerve Lesions.
    - Sciatic and Lateral Popliteal Lesions.
    - Brachial Plexus injuries including Erbs, Klumpke's and Crutch palsy.

16. **Hand Injuries**: Outline of clinical features, complications and management of : Flexor and extensor tendon injuries. Crush injury of Hand. Burn injuries of hand.

17. **Amputations:** Definition, levels of amputation of both lower and upper limbs, indications, complications.

18. **Orthopedics Surgery:** Principles of Operative Treatment: List indications, contraindication and briefly outline principles of: Athrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon – Transfers and Arthroscopy.

19. **Regional Conditions** : Definition, Clinical features and management of the following regional conditions
    - **Shoulder:** Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Bicipital Tendinitis. Subacromial Bursitis.
    - **Elbow:** Olecranon Bursitis (student's elbow).
    - **Wrist and Hand:** De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
    - **Pelvis and Hip :** IT Band Syndrome. Piriformis Syndrome.
    - **Knee:** Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome).
    - **Ankle and Foot:** Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis.

Text Books::

1. Wilson Watson – Zones, Fractures and Joint Injuries, Churchill Livingstone.
2. Mcrae Clinical Orthopaedic Examination , Churchill Livingstone.
3. Apley Concise System of Orthopaedics and Fractures Butterworth Heinmann.
4. Adam, Outline of Fractures ,Churchill Livingstone.
5. Adam, Outline of Orthopaedics , Churchill Livingstone.
6. Apley Physical Examination in Orthopaedics , Butterworth Heinmann.

Reference Book:

1. *Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins*
2. *Pandey & Pandey ,Clinical Orthopaedics Diagnosis ,Jaypee Brothers.*

Note: Latest edition of the suggested books are recommended.

POST Revised

B.P.T-III[rd] Year
PHYSICAL DIAGNOSIS & MANIPULATIVE SKILLS (LAB)
Minimum Hours: Lab-80 Hrs.

Course Code: BPT355 **L-0 T-0 P-4 C-2**

Course Contents:

1. Methods of evaluation, assessment of musculoskeletal system, cardiorespiratory system and nervous system
2. Interpretation of reports - EMG, NCV Studies, X-ray of Chest. Extremities & Spine & ECG
3. Special tests.
4. Case presentation with Functional diagnosis. Two cases Each in
   a. Musculoskeletal
   b. Neurological
   c. Cardiovascular & Pulmonary

Text Books:

1. *Susan B O's Sullivan, Physical Rehabilitation, Assessment and treatment, F a Davis Company*
2. *Magee,Orthopaedic Physical examination, Saunders Elsevier*
3. *Low & Read, Electro therapy Explained , Butterworth-Heinemann Limited, 2000*
4. *Nelson & Currier, Clinical Electro Therapy Appleton & Lange.*
5. *Mishra, Clinical Electromyography , Elsevier*
6. *Kaltenborn, Mobilisation ,Pub Olaf Norlis Bokhandel*

Reference Books:

1. *J. A. R. Lenman,Clinical Electromyography , , Anthony Elliot Ritchie, Churchill Livingstone*
2. *Donnatelli, Orthopaedic Physical therapy, Churchill Livingstone Elsevier*
3. *Franck I. Katch, Victor L. Katch, Exercise physiology : energy, nutrition, and human performance*
4. *Patricia Downie, Cash textbook of Physiotherapy in neurological conditions, JP Publications.*

Note: Latest edition of the suggested books are recommended.

Registrar

PRE REVISION

B.P.T-III[rd] Year
PHYSICAL DIAGNOSIS & MANIPULATIVE SKILLS (LAB)

Course Code: BPT355 **L-0 T-0 P-2 C-1**
Course Contents:

1. Identification of abnormal breath sounds & heart sound, measurement of chest expansion, pattern of breathing, vital parameters, Grades of Dyspnoea, Rate of Perceived exertion, Ankle Brachial Index.
2. Exercise tolerance testing - 6 minutes' walk test & Bruce's protocol on models only
3. Interpretation of reports - EMG, NCV Studies, , X-ray of Chest. Extremities & Spine & ECG.
4. Methods of evaluation, assessment.
5. Case presentation with Functional diagnosis. Two cases Each in
   a. Musculoskeletal
   b. Neurological
   c. Cardiovascular & Pulmonary

POST REVISION

B.P.T. – IVth Year
PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

(Minimum Hours: Theory-100 Hrs.)

Course Code: BPT401 **L-3, T-0, P-0, C-3**

Course objective:

The subject serves to integrate the knowledge gained by the students in orthopedics and Traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

Course Contents:

UNIT I

1. **Overview of PT assessment for Orthopeadic conditions:** **[2 hrs]**
   SOAP format. ICF format.

2. **Principles of PT assessment and management of:** **[15 hrs]**
   Upper limb fractures and dislocations. Lower limb fractures and dislocations including pelvis. Spinal fractures.

3. **Principles & techniques of manual therapy –** **[6 hrs]**
   Overview of Maitland, Mackenzie, Mulligan, MFR.

UNIT II

Definition, signs and symptoms, clinical features, pathophysiology, radiological features, deformities, medical, surgical management [Briefly] & Describe the PT assessment and management and home program for the following conditions:-

1. **Degenerative and inflammatory conditions** :– **(10 hrs)**
   Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.
2. **Infective conditions: –** **(5 hrs)**
   Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip.
3. **Deformities:** **(6 hrs)**
   Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, abnormal lordosis, coxa vara, coxa valga, genu varum,genu valgum and recurvatum.
4. **Spinal conditions:** **(10 hrs)**
   (Review the neurological signs) Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.

UNIT III

1. **Poliomyelitis:** **[4 hrs]**
   Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.
2. **Leprosy:** **[4 hrs]**
   Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively, fitting and training with prosthetic and orthotic devices.
3. **Amputations:** **[8 hrs]**
   Overview of amputation and PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.
4. **Osteoporosis:**
   Causes, predisposing factors, investigations and management. **[2 hrs]**

UNIT IV

1. **Pre and post operative PT in Orthopaedics surgeries:** **[8 hrs]**
   Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total- Excision arthroplasty, with implant, interpositional arthroplasty and total replacement; Tendon transplant; Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Reattachment of limbs, External fixators, Synovectomy.

UNIT V

Regional Conditions : Assessment & PT Management of the following – **[20 hrs]**

1. **Shoulder joint:** Shoulder instabilities, TOS, RSD, Impingement syndrome – conservative and Post operative PT management. Post operative PT management of. AC joint injuries, Rotator cuff tears- conservative and surgical repair.
2. **Elbow and forearm:** Excision of radial head - Post operative PT management.
3. **Wrist and Hand:** Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.
4. **Hip:** PT management of Tendonitis and bursitis.
5. **Knee:** Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries – Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome - conservative management. Patellar tendon ruptures and Patellectomy- rehabilitation.

6. **Ankle and foot:** Ankle instability. Ligamentous tears- Post operative management.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. Identify, analyze & discuss various traumatic & non traumatic orthopedic conditions & will be able to correlate them with provisional diagnosis & other investigations.
2. Describe short term & long term goals & give treatment with help of various electrotherapy modalities & manual therapy techniques.

Text Books:

1. *Tidy's physiotherapy, Churchill Livingstone..*
2. *Textbook of orthopedics- Cash, JP Publications.*
3. *Clinical orthopedic rehabilitation- Brotzman, Elsevier.*
4. *Orthopedic physiotherapy - Jayant Joshi, Elsevier.*
5. *Rehabilitation Assessment and Treament – O'Sullivan Schmitz*
6. *Sports physiotherapy- Maria Zuluaga, Churchill Livingstone*

Reference Book:

1. *Therapeutic Exercise - Carrie Hall & Brody, Wolters Kluwer/Lippincott Williams & Wilkins Health*
2. *Rehab Medicine-Part I/II – Delisa, Lippincott Williams & Wilkins*
3. *Atlas of Orthotics – AAOS, Mosby Elsevier.*
4. *Orthotics and Prosthetic in Rehab – Lusardi, Elsevier Saunders*
5. *Hand Rehab - James Hunter, Mosby*
6. *Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins.*

Note: Latest edition of the suggested books are recommended.

PRE REVISION

B.P.T. – IV[th] Year

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

Minimum Hours: Theory-90 Hrs. Lab-60 Hrs.

Course Code: BPT401 **L-3, S-0, P-0, C-3**

Course Contents:

The subject serves to integrate the knowledge gained by the students in orthopedics and Traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

1. **PT assessment for Orthopeadic conditions:**
   a) SOAP format.
   b) ICF format.
2. **Fractures:**
   a. Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals.
   b. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period
3. **Specific fractures and dislocations: PT assessment and management of**
   a) Upper limb fractures and dislocations.
   b) Lower limb fractures and dislocations including pelvis.
   c) Spinal fractures.
4. **Principles & techniques of manual therapy** – Overview of Maitland, Mackenzie, Mulligan, MFR.
5. **Definition, signs and symptoms, clinical features, pathophysiology, radiological features, deformities, medical, surgical management [Briefly] & Describe the PT assessment and management and home program for the following conditions:-**

- **Degenerative and inflammatory conditions** :– Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.
- **Infective conditions:** – Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip.
- **Spinal column** : Review the postural abnormalities & deformities of spinal column
- **Deformities:**
  Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities.
  Acquired: scoliosis, kyphosis, coxa vera, genu varum, valgum and recurvatum.
- **Spinal conditions:** (Review the neurological signs) Cervical spondylosis, Lumbar spondylosis,
  Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction,

Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.

6. **Poliomyelitis:** Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.
7. **Leprosy:** Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.
8. **Amputations:** Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.
9. **Osteoporosis:** Causes, predisposing factors, investigations and management.
10. **Orthopaedics surgeries:** Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total- Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant; Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Reattachment of limbs, External fixators, Synovectomy.

11. **Regional Conditions :Assessment & Management of the following –**

- **Shoulder joint:** Shoulder instabilities, TOS, RSD, Impingement syndrome – conservative and Post operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears- conservative and surgical repair.
- **Elbow and forearm:** Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management.
- **Wrist and Hand:** Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.
- **Hip:** Joint surgeries- hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management.
- **Knee:** Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries – Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome - conservative management. TKR- rehabilitation protocol. Patellar tendon ruptures and Patellectomy- rehabilitation.
- **Ankle and foot:** Ankle instability. Ligamentous tears- Post operative management.

POST REVISION

B.PT IV YEAR
PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

(Minimum Hours: Theory-90 Hrs.)

Course code: BPT 402 **L-3, T-0, P-0, C-3**

Course objective:

The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Course Contents:

UNIT I

1. **Review** of basic Neuro - Anatomy and Physiology **[2 hrs]**

2. **Neurological Assessment**: **[10 hrs]**

Detailed neurological examination focusing on following points:

a) Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Reasoning, and Judgment.
b) Motor Examination – Muscle power, Muscle tone- Spasticity, Flaccidity,
c) Reflexes – Developmental reflexes, deep tendon reflexes, superficial reflexes.
d) Sensory examination – Superficial, Deep and Cortical sensations,
e) Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slump test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination,
f) Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis)
g) Functional Analysis
h) Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading.

UNIT II

1. **Introduction** to Motor Control & Motor Learning, Introduction to Neural Plasticity **[4 hrs]**

2. **Neuro physiological Techniques** – **[6 hrs]**

An overview on neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy. Virtual Reality, Mental Imagery, Robotics, Body Weight Supported Treadmill Training Techniques, Bio-feedback.

UNIT III

1. **Paediatric Neurology:** **[6 hrs]**
Paediatric neurologicalExamination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management, Use of Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus,, Spina bifida, and syringomyelia.

2. **Evaluation and Management of Brain Disorders:** **[8 hrs]**
Use of various Neurophysiological approaches & Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, MND and Multiple sclerosis, Ataxia, Parkinson's disease.

UNIT IV

1. **Evaluation and Management of Spinal Cord and Muscle Disorders** **[8 hrs]**
Use of various Neurophysiological approaches& Modalities in, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome. Facial palsy.

2. **Evaluation and Management of Peripheral Nerve Injuries, peripheral neuropathies and Disorders:** **[10 hrs]**
Use of various Neurophysiological approaches& Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.

UNIT V

1. **Disturbance of speech and aphasia.** **[4 hrs]**

2. **Assessment and management of Neurological gaits:** **[4 hrs]**
Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.

3. **Pre and Post surgical assessment and treatment following conditions –** **[10 hrs]**
Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, Spina bifida, Craniotomy, Shunts.

PRE REVISION

B.PT IV YEAR
PHYSIOTHERAPY IN NEUROLOGICAL CONDITOINS
Minimum Hours: Theory-90 Hrs., Lab-60 Hrs.

Course code: BPT 402 **L-3, S-0, P-0, C-3**

Course Contents:

The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

1. **Review** of basic Neuro - Anatomy and Physiology
2. **Neurological Assessment**: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon reflexes, superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis.
3. **Introduction** to Motor Control & Motor Learning, Introduction to Neural Plasticity
4. **Neuro physiological Techniques** – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy. Virtual Reality, Mental Imagery, Robotics, Body Weight Supported Treadmill Training Techniques, Bio-feedback.
5. **Paediatric Neurology:** Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management .Use of various

Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia.

6. **Evaluation and Management of Brain and Spinal Cord Disorders** and Use of various Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, MND and Multiple sclerosis, Transverse myelitis.
7. **Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders** and Use of various Neurophysiological approaches& Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome. Facial palsy.
8. **Evaluation and Management of Peripheral Nerve Injuries and Disorders and** Use of various Neurophysiological approaches& Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.
9. **Disturbance of speech and aphasia.**
10. **Assessment and management of Neurological gaits**: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.
11. **Pre and Post surgical assessment and treatment following conditions** - Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis , Arteriovenous malformations, and Spina bifida, Craniotomy, Shunts.

POST REVISION

B.P.T. – IVth Year
PHYSIOTHERAPY IN SPORTS
(Minimum Hours: Theory-80Hrs.)

Course Code: BPT407 **L-3, T-0, P-0, C-3**

Course Objective:

The objectives of this courses that after the specified hours of Lectures, Demonstrations, Practical and Clinics, the student will be able to acquire concept of evaluation of sports and Sports injuries, and also will be able to provide Sports Training and Physiotherapy in particular to Sports injuries.

Course Contents:

UNIT I

1. Pre-exercise evaluation, On & Off Field evaluation **[5 hrs]**
2. Diet and nutrition **[4 hrs]**

UNIT II

Measurement of fitness components and sports skills **[10 hrs]**

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

UNIT III

Physiological effects of exercise on body systems **[10 hrs]**

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

UNIT IV

1. Sports injuries **[32 hrs]**

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 fascitis, turf toe syndrome
Head & face – maxillo-facial injuries, helmet compression syndrome
Shoulder – instability of shoulder, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries
Elbow – tennis elbow, golfer's elbow

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Wrist and hand – carpal tunnel syndrome, gamekeeper's thumb

2. Principles of injury prevention [4 hrs]
3. Principles of training & Rehabilitation in sports injuries. **[4 hrs]**

UNIT V

1. Drugs used in sports. **[3 hrs]**
2. Biomechanics of running, throwing, swimming. **[6 hrs]**
3. Sports psychology. **[2 hrs]**
4. **Sports in Special age groups**:

Female athletic triad **[3 hrs]**
Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition **[3 hrs]**
Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly **[4 hrs]**

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able to:

1. To understand the level of organization of the human body.
2. To understand the applied aspects of sports and its related therapies.
3. To understand the rehabilitation techniques in detail.

Text Books/Refrence Books:

1. *Sports physiotherapy- Maria Zuluaga, Churchill Livingstone*
2. *Peter Brukner, Karim Khan: Clinical Sports Medicine, Tata McGraw Hill*
3. *Gregory S. Kolt, Lynn Snyder-Mackle: Physical Therapies in Sport and Exercise, Churchill Livingstone*

Note: Latest edition of the suggested books are recommended.

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PRE REVISION

B.P.T. – IVth Year
PHYSIOTHERAPY IN SPORTS
Minimum Hours: Theory-80Hrs., Lab-40 Hrs.

Course Code: BPT407 **L-3, S-0, P-0, C-3**

Course Contents:

The objectives of this courses that after the specified hours of Lectures, Demonstrations, Practical and Clinics, the student will be able to acquire concept of evaluation of sports and Sports injuries, and also will be able to provide Sports Training and Physiotherapy in particular to Sports injuries.

Section I

A. Pre-exercise evaluation

B. Diet and nutrition

C. **Measurement of fitness components and sports skills**

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

D. **Physiological effects of exercise on body systems**

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

Section II

E. **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 fascitis, turf toe syndrome
- **Head & face** – maxillo-facial injuries, helmet compression syndrome

Section III

F. **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

G. Principles of injury prevention

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H. Principles of training & Rehabilitation in sports injuries.

I. Drugs used in sports.

J. Biomechanics of running, throwing, swimming.

K. Sports psychology.

L. Sports 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

POST-REVISION

B.P.T. – IVth Year

COMMUNITY BASED REHABILITATION

(Minimum Hours: Theory-80 Hrs)

Course Code: BPT410 **L-2, T-0, P-0, C-2**

Course objective:

The subject serves to integrate the knowledge gained by the students in community medicine/physiotherapy and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions by various aids and appliances including splints, orthosis and prosthesis.

Course Contents:

UNIT I

1. **General Rehabilitation:** Conceptual framework of rehabilitation, definitions, various models of Rehab, Rehab team including Medical person/P.T./O.T. audiologist/speech therapist /P.&O./ rehab nurse/ psychologist/ vocational guide. WHO definition of Health & disease, Health care delivery system, National Policies of Rehab, National health care programs, Community awareness, Participation, Preventive aspects & demands of PT devices **[4 hrs]**
2. **Disability & its evaluation**: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Disability evaluation, Types and Prevention and rehabilitation of disability. **[5 hrs]**

UNIT II

1. **Introduction to Community Based Rehabilitation:** Definition, Concept of CBR, Need for CBR, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR, Difference between Institution based and Community based Rehabilitation. **[6 hrs]**
2. **Principles of Community based Rehabilitation** : W.H.O.`s policies-about rural health care-concept of primary /tertiary health centers-district hospitals etc., Principles of a team work in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped. **[6 hrs]**

UNIT III

1. **Health Promotion:** Physiological changes with aerobic exercises in various systems of the body, Clinical applications of aerobic exercise, Obesity; criteria for overweight & obese patients screening and weight reductions programmes, Measurement of Body Mass Composition. **[8 hrs]**

2. **Geriatrics:** Definition gerontology, geriatrics, aging, senior citizen in India, NGO's, legal rights

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and benefits. Institutional community based elderly. Old age homes. Physiology of aging: changes in various systems: musculoskeletal, cardio-pulmonary, neurological, special senses Clinical implication, strategies for improvement. Compensatory approaches and physiotherapy management. Theories of aging **[8 hrs]**

UNIT IV: Occupational Health **[15 hrs]**

1. **Occupational & Environmental Hazards**: Accidents due to : **(4hrs)**
   Physical agents: e.g. heat/cold, light, noise, vibration, UVR. Ionizing radiation. Chemical agents: inhalation, local action & ingestion. Psychological Hazards: monotonocity job dissatisfaction, work anxiety, quality control, interpersonal relationships, work hours. Mechanical Hazards: overuse / fatigue,

2. **Role of ergonomics in prevention of occupational hazards**. **(1 hrs)**
   Injuries due to ergonomics alteration & ergonomic evaluation of work place.

3. **Industrial health**: **(3 hrs)**
   Job analysis, job description, job demand analysis, task analysis, Employee fitness, job modification

4. **Management of occupational hazards**: **(2 hrs)**
   Acute care, concept of functional capacity assessment, work hardening and work conditioning.

5. **Employment acts** [briefly]: **(3 hrs)**
   Employee state insurance scheme. Workman's compensation act. Legal aspects of disability in terms of compensation for PWD, benefits & rights.

6. **Vocational Rehabilitation**: Introduction, evaluation & management. **(2 hrs)**

UNIT V

1. Prosthetics & Orthotics : **[18 hrs]**

Definition and Biomechanical principles in designing of appliances & assessment. Classification of Aids & appliances. Differences between prosthesis and orthosis. Prostheses – For Lower limb and upper limb indications and checkout. Introduction to Splints / Orthoses – For spine, upper & lower limb. Upper Limb Orthoses: - Knuckle Bender splint, Cock Up Splint, Opponens splint, finger splints, aero plane splint, wrist hand orthosis. Spinal Orthoses: Head Cervical Orthoses, Cervical, Thoraco-lumbar, Lumbo – sacral Orthoses (Knight brace, Taylors's Brace, Milwawkee Brace, Collars); Lower Limb Orthoses: HKAFO, KAFO, AFO, Foot Orthoses (Shoe Modification); Wheel Chair – Parts and prescription

2. Role of Physiotherapy in CBR: **[8 hrs]**

Screening for disabilities, Prescribing assistive aids, Modifications physical and architectural barriers for disabled, Strategies to improve ADL Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities like RA, Hemiplegia, Paraplegia, Cerebral palsy, Polio, severe OA, Amputation; sensory loss—vision, hearing, speech impairment, Degenerative,

Geriatric patients, Other disabling conditions.

STUDENT LEARNING OUTCOMES/OBJECTIVES:

At the end of the year the student will be able:

1. To know about role of rehabilitation in community.
2. To know about role of rehabilitation in differently abled people, old age people and people working in industrial setups.
3. to plan workstations for various industrial setups to prevent workers from WRMSDs.
4. To plan and prescribe various orthotic and prosthetic equipments for prevention and rehabilitation in various musculoskeletal disorders.

Text Books:

1. *Bhaskar Rao, Text book of Community Medicine & Community Health, Paras Medical Publisher*
2. *Andrew Guccione Geriatrics Physiotherapy , Elsevier Mosby.*
3. *Glenda Key, Industrial Therapy, Mosby*
4. *Chinnathurai, Short textbook of prosthetics and orthotics, Jp Medical Pub*
5. *Pruthvish, Community Based Rehabilitation of Persons with Disabilities*
6. *Madhuri, Geriatric Medicine and Rehabilitation Medicine for Physiotherapist*
7. *Squires, Rehabilitation of the Older Person , Nelson Thornes*

Reference Books:

1. *Mural K F, Ergonomics Man in his working environment*
2. *Nordin Andersons Pope, Musculoskeletal Disorders in work place- Principle & Practice, Mosby Elsevier*
3. *G R Madan, Indian Social Problem Vol 2, Allied Publishers,Disability 2000-RCI*
4. *Gautam Bannerjee , Legal Rights of disabled in India*
5. *ICF -WHO Health Organisation 2001 publication*
6. *Park, Preventive &Social Medicine, Banarsidas Bhanot*
7. *Hallender Padmini Mendes, Training in the Community for the people with disability*
8. *David Werner , Disabled Village Children, Hesperian Foundation*

Note: Latest edition of the suggested books are recommended

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~~POST~~ REVISION
PRE

B.P.T. – IVth Year
REHABILITATION IN COMMUNITY MEDICINE & PHYSIOTHERAPY
Minimum Hours: Theory-80 Hrs., Lab-40 Hrs.

Course Code: BPT408 **L-2, S-0, P-0, C-2**

Course Contents:

The subject serves to integrate the knowledge gained by the students in community medicine/physiotherapy and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions by various aids and appliances including splints, orthosis and prosthesis.

Section I

A. **General Rehabilitation:** Conceptual framework of rehabilitation, definitions, various models of Rehab, Rehab team including Medical person/P.T./O.T. audiologist/speech therapist /P.&O./ rehab nurse/ psychologist/ vocational guide. WHO definition of Health & disease, Health care delivery system, National Policies of Rehab, National health care programs, Community awareness, Participation, Preventive aspects & demands of PT devices

B. **Disability**: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes, Types and Prevention and rehabilitation of disability.

C. **Disability Evaluation In Brief**: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data.

D. **Introduction to Community Based Rehabilitation:** Definition, Concept of CBR, Need for CBR, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR, Difference between Institution based and Community based Rehabilitation.

E. **Principles of Community based Rehabilitation** : W.H.O.`s policies-about rural health care-concept of primary /tertiary health centers-district hospitals etc., Principles of a team work in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped. National District Level Rehabilitation Program

F. **Role of Social work in CBR**: Definition and Methods of social work. Role of social worker in rehabilitation.

G. **Role of voluntary Organizations in CBR**: Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International

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- Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS.

H. **Health Promotion:** Physiological changes with aerobic exercises in various systems of the body, Clinical applications of aerobic exercise, Obesity; criteria for overweight & obese patients screening and weight reductions programmes, Measurement of Body Mass Composition.

I. **Geriatrics:** Definition gerontology, geriatrics, aging, senior citizen in India, NGO's, legal right's and benefits. Institutional community based elderly. Old age homes. Physiology of aging: changes in various systems: musculoskeletal, cardio-pulmonary, neurological, special senses. Theories of aging. Clinical implication , strategies for improvement. Compensatory approaches and physiotherapy management.

SECTION – II

J. **Occupational Health**

a) **Occupational health diseases:** Prevention, diagnosis and management.

b) **Occupational & Environmental Hazards**: Accidents due to :

- Physical agents: e.g. heat/cold, light, noise, vibration, UVR. Ionizing radiation.
- Chemical agents: inhalation, local action & ingestion.
- Mechanical Hazards: overuse / fatigue, injuries due to ergonomics alteration & ergonomic evaluation of work place.
- Psychological Hazards: monotocity job dissatisfaction, work anxiety, quality control, interpersonal relationships, work hours.

c) **Role of Physiotherapy**.

d) **Industrial health**: Job analysis, job description, job demand analysis, task analysis, Employee fitness, job modification

e) **Management**: Acute care, concept of functional capacity assessment, work hardening and work conditioning.

f) **Employment acts** [briefly]:

- Employee state insurance scheme.
- Workman's compensation act.
- Legal aspects of disability in terms of compensation for PWD, benefits & rights.

g) **Vocational Rehabilitation**: Introduction, evaluation & management.

K. Prosthetics & Orthotics :

- Definition and Biomechanical principles in designing of appliances & assessment
- Classification of Aids & appliances
- Differences between prosthesis and orthosis
- Prostheses – For Lower limb and upper limb indications and checkout.
- Introduction to Splints / Orthoses – For spine, upper & lower limb.

- Upper Limb Orthoses: - Knuckle Bender splint, Cock Up Splint, Opponens splint, finger splints, aero plane splint, wrist hand orthosis.
- Spinal Orthoses: Head Cervical Orthoses, Cervical, Thoraco-lumbar, Lumbo – sacral Orthoses (Knight brace, Taylors's Brace, Milwawkee Brace, Collars)
- Lower Limb Orthoses: HKAFO, KAFO, AFO, Foot Orthoses (Shoe Modification)
- Wheel Chair – Parts and prescription

L. Role of Physiotherapy in CBR:

a) Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.

b) Keeping in mind conditions like RA, Hemiplegia, Paraplegia, Cerebral palsy, Polio, severe OA, Amputation; sensory loss—vision, hearing, speech impairment, Degenerative, geriatric patients, Other disabling conditions.

POST REVISION

B.P.T-IV Year
SEMINAR

Minimum Hours: 60 Hrs.

Course Code: BPT 456 **L-0, S-2, P-0, C-1**

Course Contents:

PART I:

Seminar includes presentation based on the academic topics, which are selected from the curricular contents. The topics will be finalized by the concerned faculties. Seminars have to be presented in front of following members of college. The internal marks will be awarded according to his/her seminar remarks at the end of each session.

The internal assessment will be done by a panel of judging committee. The judging committee may vary for each student and will include at least following three members:

- Seminar in-charge(Guide)
- HOD of the college /HOD nominee
- One/Two faculty members from the college

S.NO.	DETAILS	Marks (100)		
		GUIDE (20)	Internal Examiner-I (40)	Internal Examiner-II (40)
1.	objective of the seminar			
2.	Content of the seminar			
3.	Way of presentation			
4.	Seminar report (hard copy & soft copy)			
5.	Viva voce			

PART II:

The concerned faculty/expert as appointed by HOD shall conduct group discussions on a common topic to increase the proficiency of use of English language & thereby helping students to improve their communication, free flow of thoughts & presentation during the seminar.

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PRE REVISION

B.P.T. – IVth Year
SEMINAR
Minimum Hours: 60 Hrs.

Course Code: BPT456 **L-0, S-2, P-0, C-1**

Course Contents:

Seminar includes presentation based on the academic topics along with a case report & recent advances (Literature review), which are selected from the curricular contents. The topics are finalized by the concerned faculties. The seminars have to be presented in front of all the faculty members of the college. The marks will be awarded according to his/her seminar remarks at the end of each session.

The internal assessment will be done by a panel of judging committee. The judging committee may vary for each student and will include at least following three members:

- Seminar in-charge(Guide)
- HOD of the college
- Two faculty members from the college

S.No.	Details	Marks (50)		Marks(50)
		Guide (10)	Internal Exam (40)	External Exam
1.	Objective of the seminar			
2.	Content of the seminar			
3.	Way of presentation			
4.	Seminar report (Hard copy & soft copy)			
5.	Viva voce			

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