SUMANDEEP VIDYAPEETH
(Declared as Deemed to be University under Section 3 of the UGC Act 1956)
Accredited by NAAC with a CGPA of 3.53 out of four-point scale at ‘A’ Grade
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CURRICULUM

MASTER OF PHYSIOTHERAPY
(MPT)

2015

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Principal
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# RULES OF DEGREE OF THE MASTER OF PHYSIOTHERPAY

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R.M.P.T.1: - THE COURSE
The Master of Physiotherapy Course will be a regular full-time course of 2-year duration. During an academic year, a candidate enrolled in the program shall not appear in any other examination of the university enrolled in or any other university. Any break in the career, power of extension of the course and the fixation of the term will be vested with the university.

R.M. P.T. 2: - NOMENCLATURE
The course will be referred to as a Master of Physiotherapy. The degree shall be Master of Physiotherapy (Elective).

R.M. P.T.3: - OBJECTIVES OF THE COURSE
1. To prepare a post-graduate student to acquire in-depth knowledge of the structure and function of the human body, specifically human movement (including movement of fluids and air into the body) and causes of its derangement with regards to selected specialty.
2. Demonstrate the ability in the conduct of diagnostic procedures on the basis of kinesiological, physiological, environmental and psycho-socio-cultural aspects so as to reach the functional diagnosis enhancing professional autonomy.
3. Demonstrate ability to critically appraise recent physiotherapeutic and related medical literature from journals & adopt diagnostic & therapeutic procedures based on it.
4. To inculcate appropriate professional relationships in multi-disciplinary set up, patient management and co-partnership basis.
5. To prepare a student to address problems related to health education and acquaint him/ her with the concept of quality care at the institutional as well as the community levels.
6. Demonstrate the knowledge of protection of rights of the community during referral as well as first contact practice & legislation applicable to compensation for functional disability & appropriate certification.
7. To provide experience in clinical training and undergraduate teaching partly.
8. To incorporate concept of management in Physiotherapy.

Program Outcome:
At the end of the program, a Post graduate student shall:
- Have in-depth knowledge of the core as well as elective subjects.
- Have the ability to differentially diagnose
- Be able to critically appraise the available literature
- Have the abilities to develop professional relationships in multi-disciplinary set up,
- Be able to deliver the quality health care at institutional as well as community level,
- Have knowledge of applicable legislation.
- Be able to practice Evidence Based Physiotherapy
- Have the skills of entrepreneurship.
R.M. P.T 4: - ELIGIBILITY FOR ADMISSION
Candidates admitted into the Master of Physiotherapy course should have passed the B.P.T. degree examination of this university or B.P.T./ B. Physio. or B.Sc. (PT) degree examination of any other recognized university accepted by the authority of this university as equivalent thereto, and has completed six months compulsory rotatory internship in a teaching institute or other institutions recognized by this university and the National body of Physiotherapists.
It is desirable that applicants should have worked as a qualified physiotherapist for at least one year in a Hospital / Institution prior to admission to the post-graduate course.

R.M. P.T 5: - SELECTION OF STUDENTS FOR MPT
Selection criteria for admission as per the norms adopted for post graduate selection in Sumandeep Vidyapeeth (SV).
In case of foreign nationals, the most recent guidelines of the National body of Physiotherapists. / University may be followed.

R.M. P.T 6: - INTAKE OF STUDENTS
The intake of students to the course shall be in accordance with the ordinance in this behalf. The guide and student ratio should be 1:5.
The course will commence on the 1st of August every year.
The intake of students to the course shall be once in a year.
No Post-graduate seat left unfilled in an academic year shall be carried forward to the next or subsequent academic years.

R.M.P.T 7: - MEDIUM OF INSTRUCTION
English shall be the medium of instruction for the subjects of study & for the examination of the MPT course.

R.M.P.T 8: - COURSE OF THE STUDIES
The course of the study, subjects and teaching schedule for 02 years of MPT course is shown in table below:
<table>
<thead>
<tr>
<th>SUBJECTS (PAPERS)</th>
<th>TEACHING HOURS</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Theory</td>
<td>Clinicals/</td>
<td>Total</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>practical</td>
<td></td>
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<tr>
<td><strong>PAPER 1</strong></td>
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<tr>
<td>Review of Basic</td>
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<tr>
<td>sciences</td>
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<td></td>
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<tr>
<td>i. Work physiology</td>
<td>100</td>
<td>75</td>
<td>175</td>
<td></td>
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<tr>
<td>and Electro Physiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ii. Biomechanics &amp;</td>
<td>100</td>
<td>75</td>
<td>175</td>
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<tr>
<td>Bio-engineering</td>
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<tr>
<td>iii. Research</td>
<td>100</td>
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<tr>
<td>methodology and</td>
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<tr>
<td>Biostatistics</td>
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<tr>
<td>iv. Education Technology</td>
<td>50</td>
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<td>50</td>
<td></td>
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<tr>
<td>v. Ethics, Management and planning</td>
<td>50</td>
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<td>50</td>
<td></td>
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<tr>
<td><strong>PAPER 2</strong></td>
<td></td>
<td></td>
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<tr>
<td>Physical and functional</td>
<td>200</td>
<td>200</td>
<td>400</td>
<td></td>
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<tr>
<td>diagnosis</td>
<td></td>
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<tr>
<td><strong>PAPER 3</strong></td>
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<tr>
<td>Advanced Physio</td>
<td>280</td>
<td>520</td>
<td>800</td>
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<tr>
<td>therapeutics</td>
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<tr>
<td><strong>PAPER 4</strong></td>
<td>Electives:</td>
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<tr>
<td>1st year</td>
<td>Evidence Based Practice I</td>
<td>100</td>
<td>100</td>
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<td></td>
</tr>
<tr>
<td>1st year</td>
<td>Clinical training</td>
<td>650</td>
<td>650</td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>Seminars, Journal Clubs, Case Presentations, Teaching skills, Field Works etc.</td>
<td>150</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>Evidence Based Practice II</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>Clinical Training</td>
<td>-</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>Seminars</td>
<td>-</td>
<td>150</td>
<td></td>
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<tr>
<td>Total</td>
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<td></td>
<td>1850 +1850</td>
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</table>
R.M.P.T. 9: METHOD OF TRAINING
The training of post-graduate for MPT degree shall be on a full-time pattern with graded responsibilities in the management and treatment of patients entrusted to his/ her care. Training should include involvement in laboratory, experimental work and research studies. The participation of all the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, clinical rounds, case demonstrations, clinics, journal review, meetings and CME. Every candidate should be required to participate in the teaching and training programs of under-graduate students.

R.M.P.T 10: -MONITORING PROCESS OF STUDIES (Internal monitoring)
It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring will be done by the staff of the department based on participation of students in various teaching/ learning activities. It may be structured and assessment be done using checklists that assess various aspects. Model checklists are included in the log book / work diary of the students.

Work diary/ Log book:
Every candidate shall maintain a work diary and record his/ her participation in the training programs conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented in the University Examination

Periodic tests:
The college may conduct two tests, one of them be three months before College / University examination at the end of each year. The test may include written theory papers, practical, viva voce and clinical in the pattern of university examination records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, if / when called for.

R.M.P.T 11: -ATTENDANCE
No candidate shall be permitted to appear for the examination unless he/ she puts 80% of the training during each academic year of the post graduate course and produces the necessary certificate of study (log book / work diary), attendance and progress from head of the institution.
Every candidate shall attend symposia, seminars, conferences, journal review meetings – grand rounds, case presentations, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons.
No candidate is permitted to run a clinic while studying postgraduate course.
Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examination.

1. The examination for MPT course shall be held at the end of 2 academic years (4 academic terms)

2. University shall conduct two examinations (Regular and Supplementary) in a year at an interval of not more than six months and not less than four months between the two examinations. Not more than two examinations shall be conducted in an academic year.

3. There shall be Internal Examination held by College at the end of 1st academic year. It shall be necessary for a candidate to achieve minimum 40 % in the examination conducted by college at the end of first academic year to appear for University examination.


The degree of Master in Physiotherapy will be taken by papers, practical and viva voce only.

Written examination (Theory) – Total marks 400
A written examination consisting of 4 papers, each of three hours duration and each paper carrying 100 marks at the end of two academic years (04 terms).

The paper IV will be an Elective subject and a separate paper for each elective subject chosen by the candidate should be given. Recent advances in Physiotherapy may be asked in any or all the 4 papers. The Theory examination shall be held sufficiently earlier than clinical/practical examination so that the answer books are assessed before the commencement of the clinical/practical examinations.

Paper V (Evidence based Practice) Shall be assessed on continuous cumulative system (CCES) attained by the candidate during the course.

Particulars of Theory question paper and distribution of marks are shown on table - Vide Notification Ref: SV/ADM/13-14/ 5062 dated 17/11/2014

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Subject</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Paper I</td>
<td>Review of Basic sciences</td>
<td>100</td>
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<tr>
<td>Paper II</td>
<td>Physical and functional diagnosis</td>
<td>100</td>
</tr>
<tr>
<td>Paper III</td>
<td>Advanced Physio therapeutics</td>
<td>100</td>
</tr>
<tr>
<td>Paper IV</td>
<td>Elective Subject (Separate for each elective)</td>
<td>100</td>
</tr>
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Clinical examination:
It should be aimed at examining clinical skills and competency of the candidate for undertaking independent work as a specialist.

Viva-voce:

~ 8 ~
Viva-voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills with special emphasis on dissertation work. The marks of viva-voce examination shall be included in the clinical examination to calculate the percentage and declaration of results.

**Micro teaching & Log Book:**

Student shall prepare a topic of his / her choice, not exceeding more than 10 minutes. Micro teaching shall aim at assessing the topic chosen (which shall be concise so as to be introduced and summarized within the time frame allotted), clear concepts, communication skill and use of appropriate audio-visual aids.

**Log book** shall be assessed by the examiners.

**Number of Candidates per day:** The maximum number of candidates for practical /clinical and viva voce examination shall be as under: Maximum of 10 per day per pair of examiners.

**Examiners:**

All examiners shall be recognized post graduate teachers. The selection of examiners/paper setter/dissertation evaluation shall be in accordance with policy of Sumandeep Vidyapeeth.

**Criteria for declaring as pass in university examination:**

**Award of classes:**

First class with distinction - 75% and above in aggregate provided the candidate pass the examination in first attempt.

First class - 60% and above in aggregate provided the candidate pass in first attempt

Pass -50% of marks in aggregate for theory and 50% of marks in aggregate for clinical and Viva-voce.

If a candidate is not able to achieve 50% aggregate in theory four papers (combined) and 50% aggregate in practical’s (practical 1&2), he /she shall not be considered as passed in the said examination and shall reappear in all four theory papers and the practical’s within the stipulated time as prescribed by the University.


**Theory** – 100 mark each paper (No Choice)

1. Long Essay (2 questions) – 2 x 20 = 40 marks
2. Short Essay (6 questions) – 6 x 10 = 60 marks

**Practical / Clinical** – 150 Marks each practical

Note: All cases for clinical examination should be on patients & not on models.

**PRACTICAL 1:** Physical & Functional Diagnosis

A. Non elective case (1) - 1 x 100= 100 marks
   Assessment, Physical & Functional Diagnosis and Management
B. Micro-teaching and assessment of log books – 50 marks

**PRACTICAL 2**

A. Elective Long case (1) – 1 × 100 = 100 marks
B. Dissertation Viva – Voce – 50 marks

= 50 marks

**Supplementary examination:**
In Supplementary examination, practical examinations shall be conducted as follow:
1. Non-Elective case (1) – 1 × 100 + 50 Viva voce = 150 marks
2. Elective Long case (1) – 1 × 100 + 50 Viva voce = 150 marks

Supplementary examination shall not include Micro teaching, Dissertation viva-voce and assessment of log book.
The criterion for thesis evaluation will be – acceptable/non-acceptable. No marks will be awarded.
Oral defense is mandatory, which may be closed (external/internal examiner) or open (in addition to the examiners other faculty and students may be invited)

**R.M. PT 15: -DISSERTATION**
Every candidate pursuing MPT degree course is required to carry out work on a selected research project in their elective subject under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of dissertation. The dissertation is aimed to train a graduate student in research methods & techniques. It includes identification of a problem, formulation of a hypothesis, search & review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results & drawing conclusions.
Every candidate shall submit to the registrar (academic) of the university in the prescribed Proforma, a synopsis containing particulars of proposed dissertation work within 6 months from the date of commencement of course on or before proper channel. Obtaining ethical clearance from Institutional Ethical Committee of SV is mandatory for submission of synopsis.
Such synopsis will be reviewed & the university will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the competent authority.

The dissertation should be written under the following heading
1. Introduction.
2. Aims or objectives of study.
3. Review of literature.
5. Results.
6. Discussion.
7. Conclusion.
8. References.
The written text of dissertation shall not be less than 50 pages & shall not exceed 100 pages excluding references, tables, questionnaires & another annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27” x 11.69") and
hard bound properly. Spiral binding should be avoided. Declaration by the candidate, certificate by the guide & Head of the institution and ethical clearance are mandatory for submission.

M.P.T Final year students shall be required to submit the five copies of dissertations (both hard & soft copy) within the stipulated time (Three months prior to the Final University Examination) to the examination section of university through the proper channel. Five hard bound copies of dissertation work will be distributed as follows:

1. One copy will be given to University library
2. One copy will be given to Departmental library
3. One copy will be given to Guide
4. One copy will be given to External examiner
5. One copy will retain with student

The examiners appointed by the university shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear in the university examination. The dissertation shall be valued by the evaluator (examiners) apart from the guide out of which one is external outside the university / state. Any one-evaluator acceptance other than the guide will be considered as a precondition for eligibility to take up the examination.

In case of non-acceptance of dissertation by external the university shall send the dissertation for re-assessment. If the result is still non-acceptance (despite of the changes made in the dissertation) the student shall be declared as not eligible to appear for university examination.

The student shall appear for supplementary examination provided he/she satisfies the above condition.


**Criteria for recognition of MPT guide –**

1. MPT with five years of teaching experience working on a full time position at a recognized institution. The age of guide shall not exceed 65 years. The guide student ratio should be 1:5.

2. Relaxation for the criteria one, notwithstanding above, in view of acute shortage of teachers, the person having three years post MPT teaching experience working on a fulltime basis may be considered as P.G teacher, till further notice from the University.

3. MPT guide shall essentially guide the students of her / his specialty / elective, however he / she shall guide other than his Physiotherapy specialty / elective in case of non-availability of the Guide.

**Change of Guide** - In the event of registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

The student shall be permitted the change of specialty / elective only:
- Within first three months of the beginning of the academic term.
- With the permission of the competent authority of the University.

R.M.P.T 17: READMISSION AFTER BREAK OF STUDY

Candidates having a break of study of 5 years and above from the date of admission and more than two spells of admission of break will not be considered for re-admission.

a. The five years period of break of study shall be calculated from the date of first discontinuance of the course by the candidate.
b. A candidate having a break of study shall be re-admitted after satisfactory fulfillment of the regulations of the University at the commencement of an academic year only and shall undergo the full duration of the course with no exemption in the period of study and will be permitted to appear for the examinations as prescribed in the regulations.

R.M.P.T.18: MIGRATION / TRANSFER OF CANDIDATE

Request of transfer during the course of study will not be entertained under any Circumstances.

R.M. P.T.19. COURSE CONTENT

Paper-I: REVIEW OF BASIC SCIENCES
(Work Physiology, Electro physiology, Bio - mechanics and Bio engineering, research, Bio-statistics, Education technology, Ethics, Management and planning)

Objectives:
At the end of course the candidate will have to
A acquire the updated knowledge of applied physiology as related to work, physical exercise, exercise tolerance and general fitness and be able to interpret the physiological effects of the vital parameter of simple laboratory tests such as Stress Test.
B acquire the updated knowledge of electro physiology so as to be able to interpret the various electro diagnostic tests with appropriate clinical reasoning.
C acquire the updated knowledge of the patho mechanics of the human movement, be able to prescribe, check out and train in the application of orthosis/ prosthesis and mobility aids
E acquire an ability to plan and execute and independent research project / dissertation on any selected sub specialty
F acquire ability to assume teaching and leadership positions in PT educational programme.
G be able to impart knowledge and train the students in the subjects at the undergraduate level
H acquire on ability to presence the ergonomics alteration at the workplace and industry
I acquire the updated knowledge of requirement of ideal nutrition for general fitness and health promotions.

Course Outcomes:
At the end of the course the student shall have acquired the updated knowledge of applied physiology, electro physiology, patho-mechanics of the human movement, ergonomics
alteration at the workplace and Industry and ideal nutrition for general fitness and health promotions. Be able to prescribe, and train in the application of orthosis / prosthesis and mobility aids, plan and execute independent dissertation and acquire ability to assume teaching and leadership positions in PT educational programme.

REVIEW BASIC SCIENCES

WORK PHYSIOLOGY
1. Physiological and physical work
2. Ergonomic aspects of work, energy transfer, oxygen intake and oxygen debt, cardio-pulmonary and thermo regulatory changes during muscular work.
4. Individual and environmental factors influencing muscle work and environmental control.
5. Fatigue assessment and scientific organization of work-rest regimes to control fatigue.

ELECTRO PHYSIOLOGY
2. Electrical excitability of muscle and nerve and composition of peripheral nerves
3. A muscle plasticity to response to electrical stimulation
4. Instrumentation for Neuromuscular electrical stimulation (NMES)
5. Neurobiology of afferent pain transmission and central nervous system mechanisms of pain modulation
6. Electrical stimulation and circulation
7. Clinical electro physiological testing

BIO MECHANICS and BIO ENGINEERING
1. Material properties of bones and soft tissues
2. Internal and external forces during posture and activities
5. Neural control of loco-motor functions.
6. Analysis of functional hazards related to environment / Industry and clinical reasoning for the appropriate Ergonomic advice
7. Applied mechanics in the application of Prosthesis, Orthosis and Mobility aids – materials, designs and biomechanical compatibility.

RESEARCH METHODOLOGY & BIO STATISTICS
1. Meaning of research, objectives, motivation and types of research
2. Research process and criteria of good research
3. Problems encountered by researches in India & defining the research problem
4. Research design & sampling design
5. Measurement & scaling techniques. Method of data collection
6. Processing and analysis of data. Sampling fundamentals.
7. Analysis of variance & c/o-variance
8. Role of computer in research and ethical concepts.
EDUCATION TECHNOLOGY

Objective:
At the end of the course, the candidate will acquire the knowledge of
A. Development of educational aims, the major educational theories and concepts of modern & contemporary philosophies.
B. Concepts and principles of curriculum development, instruction, learning and evaluation
C. Principles of counseling and guidance and the responsibility of the school for providing suitable environment of learning
D. Locate and use library and other resources in planning

Syllabus
1. Educational aims, Agencies of education, Major philosophies of education, Modern & contemporary philosophies of education, Role of educational philosophy and Current issues and trends in education
2. Theories of teaching, Relationship between teaching and learning, Psychology of education and Dynamics of behavior, motivational process, of learning perception, individual differences, intelligence and personality
3. Curriculum committee, curriculum development for Physiotherapy, Types of curriculum, Formation of philosophy, objectives, course objectives, Placing, Corse placement, time allotment, Selection and organization of learning experience, Plans of courses, Rotational plan – individual rotational plan, correlation of theory and practice, Hospital and community areas for clinical instruction, Clinical assignments and Current trends in curriculum planning.
4. Strategies of teaching, planning of teaching, Organization, Writing lesson plans, A-V aids, Teaching methods – Socialized teaching methods
5. Nature of measurement of education, meaning, process, personal, standardized, non standardized tests, Steps in constructing a test, measurement of cognitive domain, assessment techniques of affective, psychomotor domains, administering scanning and reporting, Standardized tools, important tests of intelligence, aptitude, instrument, personality, achievement and sestets scale, Program evaluation and Cumulative evaluation.
6. Philosophy, principles and concepts of guidance and counseling services of students and faculty.
7. Faculty development and development of personnel for PT services.

ETHICS, MANAGEMENT AND PLANNING

Objectives:
At the end of the course, the candidate will acquire the knowledge of
A. Ethical codes of Physiotherapy practice as well as moral and legal aspects of Indian Association of Physiotherapy, W.C.P.T., with the brief knowledge of role of W.H.O.
B. Acquire the managerial & management skills in planning, implementation, administration in clinical practice (service/self employment), academic activities including the skill of documentation & use of information technology in professional practice.
Syllabus:
1. Concept of morality, ethics and legality
2. Professional Ethics towards client- Respect & dignity, -Confidentiality, Responsibility
3. Communication skills, informed consent, Client interest & satisfaction
4. Interdisciplinary relation – Co-partnership, mutual respect, Confidence & communication
6. Role of professional I Socio-Cultural & Socio-economical context
7. Constitution & functions of I.A.P.
8. Role of W.C.P.T. and its various branches / special interest groups and Role of W.H.O.
9. Management – Theories and their application to Physiotherapy practice, service quality at various levels of the health delivery system, teaching institution and self employment and principles and concepts.
10. Administration & marketing – Personal policies – Communication and Contact – Administration principles based on Goal & Functions at large hospital / Domiciliary set up / private clinical / academic institution.
   - Methods of maintaining records – Budget planning
   - Leadership and team work.

Paper-II: PHYSICAL & FUNCTIONAL DIAGNOSIS

Objectives:
At the end of the course the candidate will have to
A. Acquire expertise in the knowledge, skill and interpretation in the advanced technological diagnostic tests pertaining to movement dysfunction, also principles of the pathological investigation and radio imaging techniques related to neuro-musculo-skeletal and Cardio-pulmonary disorders with interpretation.
B. Acquire updated knowledge of development of nervous system with emphasis on sensory motor behavior and acquire knowledge, skills and be able to interpret Psychophysiological and Neuro-psychological tests.
C. Acquire expertise in knowledge, skills and interpretation of various Electro diagnostic tests
D. Acquire knowledge, skills of various approaches of manual therapy for peripheral joints/ spine and be able to integrate the manual therapies to rehabilitate the mechanical, neuro, muscular problems.
E. Acquire updated and in-depth knowledge of physiology of aging of different systems, and develop expertise to manage physical, mental and social problems of the geriatrics population physiotherapeutically.
F. Acquire a skill in disability evaluation and be able to CERTIFY the same.
G. Be able to impart knowledge and train the students in the subjects at the undergraduate level
Course Outcomes:
At the end of the course the student shall have acquired expertise in the knowledge, skill and interpretation in the advanced technological diagnostic tests, Psycho-physiological and Neuro-psychological tests, and Electro diagnostic tests. To acquire knowledge and skill of manual-therapy, managing geriatrics population, and disability evaluation

SYLLABUS
1. Clinical examination in general and detection of movement dysfunction
2. Principles of pathological investigations and imaging techniques related to neuromuscular, skeletal and cardio pulmonary disorders with interpretation.
3. Developmental screening, development diagnosis, neurodevelopment assessment and motor learning – Voluntary control assessment
4. Anthropometric measurements
5. Physical fitness assessment by
   a. Range of motion.
   b. Muscle strength, endurance and skills
   c. Body composition
   d. Cardiac efficiency tests and spirometry
   e. Fitness tests for sports
6. Psycho-physiological and Neuro-psychological tests
8. Massage, Mobilization and manipulations.
9. Aids and appliances, adaptive functional devices to improve neurological dysfunction
10. Inhibition and facilitation techniques
11. Exercise ECG testing and monitoring
12. Pulmonary function tests.
13. Cardio – vascular function disorders & principles of management, cardio-respiratory function disorders and assessments.

RECOMMENDED BOOKS – REVIEW OF BASICS AND PHYSICAL&FUNCTIONAL DIAGNOSIS
11. Katherine F. Shepard, Gail M. Jensen, Handbook of teaching for physical therapists
13. Physical Therapy Administration & Management – Hickik Robert J.
18. Physical Management of Multiple Handicapped – Fraser, William & Wilkins, Baltimore.

COURSE CONTENTS

PAPER III: ADVANCED PHYSIOTHERAPEUTICS

Objectives:
At the end of the course the candidate will
A have acquired the updated knowledge of exercise physiology, electro physiology and pharmaco-therapeutic agents used in combination with various electro-therapeutic modes, with appropriate clinical decision & reasoning in the management of pain / tissue healing / wound care and skin conditions.
B have acquired the updated knowledge of allied therapies viz. Yoga, acupuncture, magneto therapy, naturopathy and be able to integrate it with Physiotherapy.
C have acquired updated, in depth knowledge and skills of Physiotherapy for all the medical and surgical conditions including the intensive care areas related to the same.
D be able to impart knowledge and train the students in the subjects at the undergraduate level
E Acquire in depth understanding of concept of community physiotherapy, capability of leading the team of community-based rehabilitation

Course Outcomes:
At the end of the course the student shall have acquired the updated knowledge of exercise physiology, electro physiology, pharmaco-therapeutic agents, allied therapies, all the medical and surgical conditions including the intensive care areas, community Physiotherapy, and the capability of leading the team of community-based rehabilitation

Syllabus:
1. Physiotherapy in pain management such as electromagnetic radiation, ultrasound, laser, electro acupuncture, Combination therapy etc.
2. Maternal and child care in general Physiotherapy
3. Applied neuro anatomy and neuro Physiotherapy
4. Theories of motor learning
5. Therapeutic biofeedback & psychosomatic training.
6. Functional training - respiratory exercises, training for feeding, bladder and bowel training, coughing and compression, artificial respiration, inhalation therapy & intensive care unit procedures.
7. Physiotherapy in common conditions of skin
8. Physiotherapy in common vascular diseases
9. Physiotherapy in deficiency diseases
10. Physiotherapy in respiratory disorders
11. Physiotherapy management of ischemic heart diseases
12. Cardiopulmonary medications and their effect on activity performance
13. Exercise planning and prescription, MET value of various exercises and activity, Effect of aerobic, anaerobic as well as Isometric and Isokinetic exercises on cardiac function & Ergonomic aspects of exercise on oxygen, energy consumption.
14. Physiotherapy in psychiatry
15. Management of pain in neuro and musculo skeletal disorders
16. Physiotherapy management of postoperative patients in cardiopulmonary disorders & other surgeries.
17. Monitoring systems and defibrillators. Artificial respirators
18. Physiotherapy in post operative management of metabolic, hormonal, neoplastic and infective conditions of bones and joints and soft tissue repairs.
19. Physiotherapy management following head injuries, in intensive care and neuro surgical procedures
20. Physiotherapy following obstetric and gynecological disorders.

RECOMMENDED BOOKS

34. Cardiopulmonary Physiotherapy – Irwin C.V., Mosby, St. Louis 1990.
40. Industrial Therapy – Key G.L. Mosby – St. Lous 1987

**PAPER IV: ELECTIVE SUBJECT**

Course Outcome:
At the end of the course the student shall have acquired the updated knowledge in the elective area, recent trends in the respective field and managing the patients with evidence-based physiotherapy.
1. PHYSIOTHERAPY IN MUSCULO-SKELETAL DISORDERS AND SPORTS

OBJECTIVES:
This course shall enable the candidate to establish first contact Physiotherapy for the management of Musculo-skeletal conditions and pain, expertise in the skills of manual medicine, advance electro-diagnostic / therapeutic skills, and ability to function as a consultant in the team of health professionals concerned with sports sciences, hand rehabilitation, women’s health as well as geriatric health & industrial set up. The sub specialties are
a. Advances in Manual medicine and pain management
b. Rehabilitation of the hand
c. Sports sciences
d. Industrial health & Ergonomics
e. Women's health and Geriatric health
f. Applied Bio mechanics & Bioengineering

Syllabus:
1. Applied anatomy with emphasis on Biomechanics, Kinesiology, work physiology and locomotor function.
2. Clinical assessment and rationale of Laboratory investigations along with differential diagnosis
3. Clinical symptomatology, pathophysiology and Patho-mechanics of musculo skeletal conditions
4. Functional assessment (Hand function, Gait, Posture, A.D.L., Occupational work)
5. Kinetic and kinematics analysis
6. Analysis and classification of sports and sports injuries
7. Assessment of locomotor impairments, disabilities and disability evaluation
8. Physiotherapy management of locomotor disorder, principles of medical and surgical aspects.
12. Joint manipulation – peripheral joints and vertebral joints
15. Analysis & classification of sports injuries. Injuries related to specific sports.
16. Management of sport injuries, sports fitness and sports psychology and retraining.

References
3. Biomechanical Basis of Human Movement -; Joe Hamill and Knutsen Publishers -
Williams and Wilkins.
17. Mechanical Diagnosis and Therapy - Robin Mckenzie.

2. PHYSIOTHERAPY IN NEUROLOGICAL AND PSYCHOSOMATIC DISORDERS

Objectives:
The course shall enable the candidate to expertise in early intervention acquisition and application of Neuro motor and sensory integration skills on adults and pediatric neurological conditions as a first contact practitioner. Such candidate shall also attain an ability to acquire a position as consultant in the team of Health care professionals involved in Electro diagnosis, disability evaluation, as well work in the management of patients at the intensive care area & / or in the rehabilitation neurologically affected adults and children / neonates. The sub-specialties are

a. Adult neurological and psychosomatic conditions and applied neuro physiology
b. Developmental and pediatric neuro pathological conditions
c. Applied bio mechanics and bioengineering
d. Geriatric
e. Electro diagnosis
f. Intensive Care
SYLLABUS
1. Review of Neuro - anatomy and Physiology of Nervous System

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2. Normal development of the nervous system
3. The neurology of aging
4. Neural plasticity and neural repair
5. Clinical symptomatology and pathophysiology of neurological disorders
7. Evaluation of A.N.S. dysfunction with reference to psycho-physiological testing, Biofeedback training
8. Neuro-psychological functions. Perception testing and training
9. Motor control assessment, reflexes and automatic reactions – voluntary control, feedback mechanisms
10. Advance neuro-therapeutical skills and different treatment approaches for management and Motor learning and motor control training techniques
11. Advance physiotherapeutic management for neurological disorders Introduction, epidemiology, aetiology, patho-physiology, clinical presentation, investigations, and medical, surgical and Physiotherapy management for the following area:
12. ICU management for neurologically ill patients

References
15. Physical therapy of Cerebral Palsy, Miller Freeman, Springer Verlag, 1st Ed. 2007.
28. Orthopaedics and Prosthetics in Rehabilitation, Michelle Lusar DI, Elsevier, 2nd Ed. 2007
30. Spinal deformity, Stagnara, P. Butterworths, 1ST Ed. 1988
37. Essentials of dermatology, Venereology and Leprosy. Chattopadhyay SP, Jaypee brothers medical publishers (P) LTD, 1ST Ed.2003
3. PHYSIOTHERAPY IN SPORTS

Objectives:
This course shall enable to establish first contact Physiotherapy for management of sports injury, emergency care, athletic first aid, prevention of sports injury. It will help to function as a consultant in the team of health professionals concern with sports science, women’s health and common medical problems related to sports persons.

The sub-specialties are:
a. Industrial health & geriatrics.
b. Sports injury.
c. Sports psychology.
d. Women’s health

Syllabus:
1) Applied Anatomy, Physiology, Pathology, and Pharmacology & Radiology.
2) Training Schedules.
3) Sex differences in Exercises.
4) Principles of kinematics & kinetics, biomechanical analysis of various sports activity.
5) Ageing and Exercise.
6) Principles of strengthening exercises, mobilization and application of neuro muscular facilitation techniques in sports.
7) Prevention of Athletic Injury.
8) Common injuries of the upper limb and lower limb.
9) Emergency Care and athletic first aid: - Cardiopulmonary resuscitation, Shock Management internal and external bleeding, Splinting, Stretcher use.
10) Injuries in Children Adolescent & female.
11) Exercise Therapy in post surgical management of sports Injuries.
12) Injuries due to hot and cold climate.
13) Acute overuse injuries of upper limb, lower limb, chest abdomen and their managements, Common medical problems associated with sports person.
14) Analysis and Classification of sports and sports injuries. Injuries related to the specific sports.
15) Effect of exercise on different systems, obesity & weight control, ageing of exercise.
16) Sports psychology.
17) Exercise training of prescription, high altitude training, special aids for performance enhancement, doping in sports.
18) On-field management of athletic Injury.
19) Principles of musculo-skeletal health and performance related fitness used in sports & Industrial Health.
20) Female Athletes specific problems.

References
1. Kinesiology: The mechanics and Pathomechanics of Human Movement by C.CarolA.Oatis - Lippincott
2. Cash Text Book for Orthopedics and rheumatology for physiotherapist by John Elizabeth Cash & Patricia A Downie – Lippincott
3. Exercise Physiology by Mc Ardle, Katch&Katch (Lippincott Williams and Wilkins,2000)
4. Therapeutic Exercise: Treatment Planning for Progression by Francis E. Huber, Christly. Wells (W.B. Saunders Company, 2006)
6. Therapeutic Exercise, Moving Towards Function by Carrie M. Hall and Lori Thein Brody (Lippincott Williams & Wilkins, 2004)
8. Clinical Orthopaedic Rehabilitation by S Brent Brotzman
9. The Athlete’s Shoulder by Wilk (CHL,2/e,2009)
10. Leon Chaitow Muscle energy techniques by Fritz (CHL,3/e,2006)
11. Emergency care in Athletic training by Gorse (FA.Davis company,2010)
16. Muscles: Testing and function with posture and pain by Florence Kendall (Lippincott Williams & Wilkins,5/e,2005)
17. ACSM’S Guidelines for exercise testing and prescription by American college of sports medicine (Lippincott Williams & Wilkins,7/e,2005)
18. ACSM’S Resources for clinical exercise physiology: Musculoskeletal, Neuromuscular, Neoplastic, Immunologic and Hematologic conditions by American college of sports medicine (Lippincott Williams & Wilkins,2/e,2009)
19. Sports and exercise nutrition by William Mcardle(Lippincott Williams & Wilkins,3/e,2008)
20. Athletic and Sports issue in Musculoskeletal Rehabilitation by David J Magee (Saunders,2010)
22. Athletic Footwear and Orthosis in sports medicine by Matthew B.Werd (Springer,2010)
23. Sport Stretch by Michael J.Alter (Human Kinetics,2/e,1997)
24. Conditioning for strength and human performance by Jeff Chandler (Lippincott Williams & Wilkins,2007)
25. An illustrated guide to Taping techniques: Principles and practice by Thomas john heureston (Mosby,2/e,2009)
27. Aerobic exercise in special populations by Carlos ayanperez (Nova science publications,2010)
28. Essentials of strength and conditioning by National Strength and Conditioning Association (Human Kinetics,2/e,2000)
29. Exercise technique manual for resistance training by National Strength and Conditioning Association (Human Kinetics, 2/e, 2008)
32. ACSM’S Advanced exercise physiology, American college of sports medicine (Lippincott Williams & Wilkins, 2005)
33. The Shoulder in sports: Management, Rehabilitation and Prevention by Andrea Fusco (Churchill Livingston, 2007)
35. Foundations of sports and exercise psychology by Robert Weinberg (Human Kinetics, 5/e, 2010)

4. PHYSIOTHERAPY IN CARDIORESPIRATORY AND INTENSIVE CARE

Objectives:
The course shall enable the candidate to expertise in the knowledge and skill of operating advanced instrumentation at the Intensive Care area as well as modern investigative procedures such as stress testing in the presence of a physician. Such candidate shall also attain an ability to function as an essential team member of Intensive care units, as well as team of experts in the Cardio-respiratory rehabilitation general fitness and health promotion at the hospital set ups Industrial / Geriatric set ups, Health clubs, Sports fitness / training and women’s health.
The sub specialties are
a. Adult & Pediatric emergency
b. Cardiac rehabilitation and management
c. Pulmonary rehabilitation
d. Geriatric and Industrial health
e. Women’s health
f. Sports sciences and Health preparation

Syllabus:
1. Review of the anatomy and physiology of cardiopulmonary system. Applied anatomy and physiology of cardiopulmonary system.
2. Intra uterine development of cardiopulmonary system and difference between adult and paediatric cardiopulmonary system.
3. Assessment of cardiopulmonary system and differential diagnosis.
4. Evaluation of pulmonary dysfunctions
5. Investigations in cardiology and its clinical implications
6. Clinical exercise testing and assessment of physical and functional capacity
7. Physiotherapy in pulmonary and cardiology conditions
8. Strength and endurance training – planning and prescription of aerobic and anaerobic training.
9. Basic care and emergencies in cardio-respiratory Physiotherapy
10. Advance chest physical therapy adjuncts
12. Physiotherapy management for medical and surgical cardiopulmonary conditions.
13. Evaluations of peripheral vascular disorders and Physiotherapy management of peripheral vascular disorders.
15. Respiratory management in neurological disorders – CVA, GBS, MND, Muscular Dystrophy, Traumatic brain injuries (TBI), Spinal cord injuries (SCI)
16. Principles and prescription of pulmonary and cardiac rehabilitation.
17. C.B.R. in Cardio-vascular and respiratory conditions

References
1. Chest physical therapy & pulmonary rehabilitation, 2nd edition by Donna Frownfelter, Year book medical publishers
2. Nunn’s applied respiratory physiology, 6th edition by Lumb& Nunn, Elseveir
3. American college of sports medicine (ACSM’S) Advanced exercise physiology
5. Pleural diseases, 5th edition by Light, Lipponcott, Williams & Wilkins
6. Chest Physiotherapy in Intensive Care Unit (ICU), 2nd edition by Mackenzie, Lipponcott, Williams & Wilkins
7. Clinical practice in respiratory care by Fink & Hunt, Lipponcott, Williams & Wilkins
8. Paediatric respiratory care by Amman Prasad & Hussey, Champman& Hall
10. Emergency Physiotherapy by Harden & Pryor, Churchill Livingstone
11. Physiological Assessment of Human Fitness, 2nd edition by Maud & Foster, Human Kinetics
21. ECG made easy, 3rd edition, Jaypee Publishers

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28. ACLS & BLS – Provider Manual by American Heart Association
29. Thoracic Drainage by Noel Fisherman, Year Book Medical Publishers
30. Physiotherapy in Respiratory Care – an evidence-based approach to respiratory and cardiac management, 3rd edition by Alexandra Hough, Nelsons & Thones
31. Cardiac Rehabilitation – implications for the nurse and other health professionals by Paul Fardy, Mosby
32. Clinical Assessment in respiratory care, 5th edition by Wilkins, Mosby
33. ACSM’s Guidelines for exercise testing & prescription, 8th edition
34. ACSM’s Health related fitness assessment, 1st edition
35. Emergency Physiotherapy, 1st edition by Harden B, Nobelium Book
38. Exercise physiology, 4th edition by McArdle, Katch & Katch, Lipponcott, Williams & Wilkins

5. PHYSIOTHERAPY IN COMMUNITY HEALTH

Objectives:
The course shall enable the candidate to expertise in the community health and function in the general set up as consultant. Such candidate shall attain ability as a consultant and mandatory member of the team of health professionals, involved in the following sub-specialties
a. Sports sciences and health promotion
b. Movement and Psycho-somatic conditions
c. Cardio-pulmonary rehabilitation
d. Mother and child care
e. Industrial health
f. Geriatrics

Syllabus:
1. Health and Illness; Levels of Healthcare & Fitness.
2. Basic Concepts of rehabilitation and foundations of rehabilitation.
3. Methodology of CBR with reference to National Health Delivery system.
4. Role of National Institutes, District Rehabilitation Centre and Primary Health Centre (with appropriate exposure).
6. Role of Non-Government organizations in CBR.
7. Scope of community Physiotherapy.
9. Physical fitness, stress management through yoga and psychosomatic approaches.
10. Physiotherapy in maternal and child health care.
11. Evaluation and theories of aging; Assessment of the elderly; Exercise prescription for the elderly; Psychosocial and safety issues in elderly.
13. Prevention of work related Injuries and redesigning workspace, Designing auditory and visual displays for workers; Occupational stress; Environmental Pollution – nose, vibration etc.
14. Women’s, Health: Women in India, Social issue having impact on physical Function, Legal rights and benefits, women’s reproductive health and health care prescription in pre and post natal stage.
15. Recent Advances in Community Physiotherapy.

References
1. Textbook of community medicine and community health—by Bhaskar Rao
2. Industrial therapy—Glender Key
3. Community based rehabilitation for person with disability- S.Pruthuvish
4. Community based rehabilitation for person with disability- Malcoam peat
5. Disability 2000- RCI
6. Legal rights of disabled in India- GautamBanergee
7. Disabled village children by David Werner
8. Physical rehabilitation- Sussan O Sullivan
9. ICF- WHO 2001 publications
10. Preventive and social medicine- K.Park
11. Mural K F –Ergonomics: Man in his working environment
12. Exercise Physiology—by Mc’Ardle
13. Musculoskeletal Disorders in work place: Principle & Practice—by Nordin Andersons Pope
16. Geriatrics Physiotherapy – By Andrew Guccione
17. Training in the Community for the people with disability –by HallenderPadmini Mendes
19. Willard and Spackman’s occupational therapy - Neistadt&Crepeau – Lippincott
20. Ministry of social justice and empowerment.
6. PHYSIOTHERAPY IN GERIATRICS

Objectives:
The course shall enable the candidate to expertise in the identification and management of various problems associated with aging.

Syllabus:
1. Theories of aging - physiological social and cognitive or psychological theories.
2. Physiological and anatomical changes during aging.
3. Geriatric pharmacology- Age related changes in drug sensitivity and pharmacodynamics, common drugs used in elderly, complications and side effects of common drugs in aged body.
4. Management of effect of aging on various systems like muscloskeletal, cardiovascular, endocrine etc.
5. Nutrition in the aged
7. Healthy aging.
8. Environmental modification for the aged population including ergonomics.
9. Geriatric psychiatry
10. Hospital and nursing home care
11. Falls-Demography, psychosocial issues associated with falls, etiology and pathophysiology of falls, Intrinsic and extrinsic fall risk factors, evaluation methods, prevention strategies.
12. Role of Physiotherapy in treatment of common conditions

References
8. Physiotherapy practice in residential aged care by Jennifer C Nitz, Susan R Hourigan.
PHYSIOTHERAPY IN PEDIATRICS

Objectives:
The course shall enable the candidate to expertise in the early invention and the management of neonates and high-risk babies, neuro-developmental, musculo-skeletal & cardio respiratory conditions in the pediatric population the intensive care, hospital or community set up, school and sports clubs. The sub specialities are
a. Pediatric Musculoskeletal conditions
b. Pediatric neurological and psycho-somatic conditions
c. Neonatal care and early intervention
d. Mother and child care
e. Cardio pulmonary conditions in pediatrics including intensive care
f. Sports in children

Syllabus:
1. Genetic basis of pediatric disorders. Embryology & genetic counseling
2. Growth and development of a child and its disorders
3. Neurodevelopment assessment, developmental diagnosis. Developmental screening
5. Assessment of progressive loco motor disorders – Neuropathic and Myopathic
7. Early intervention- high risk babies, Neonatal care and management
8. Maturational, Pathophysiological and recovery process in the CNS.
9. Pediatric surgeries and its post-operative management.
10. Sports and fitness in pediatrics and Analysis of fitness and exercise prescription for special pediatric populations
11. Recent Advances and Evidence Based Practice in Pediatric Physiotherapy.
References
22. Physiotherapy and the growing child, Yvonne R Borns, Julie MacDonald, 1996, W.B.Saunders Company Ltd.
8. PHYSIOTHERAPY IN WOMEN’S HEALTH

Objectives:
This course shall enable to candidates to have in depth knowledge to evaluate and treat female clients, promoting and enhancing health through the lifespan

Syllabus:
1. Adolescence and musculoskeletal system, diet and exercise for the adolescent
2. Role of PT in obstetrics care
3. Diagnosis and treatment of musculoskeletal pain and dysfunction in the childbearing year
4. Maternal disorders and diseases
5. Physical therapy care during labour- normal, late and complicated pregnancy, maternal position, pain mechanism and relief
6. Postpartum care- anatomical and physiological changes post- partum, postnatal exercise program, post caesarean exercise program
7. Physical therapy care in high risk pregnancy
8. Neonate handling assessment and management
9. The climacteric
10. Role of physiotherapy in Gynecologic care
11. Cancer rehabilitation
12. Lymphedema management
13. Anatomical, physiological, psychological, cardiovascular and other systemic changes, postmenopausal osteoporosis, falls, fracture in elderly women
14. Exercise testing and prescription in female athletes and women
15. Physiotherapy following gynecological surgery
16. Fitness testing and exercise prescription in gynecological conditions (infertility, PCOD, Obesity)
17. Advances in women’s Health

9. EVIDENCE BASED PHYSIOTHERAPY

Objectives:
1. Systematically reviewing the evidence: Stages of systematic reviews, Meta analysis and The Cochrane collaboration.
2. Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice.

Course work
Topic related assignments in evidence-based Physiotherapy.
Topic related seminars in evidence-based Physiotherapy.
Topic related UG teaching in evidence-based Physiotherapy
Evidence based practice in clinic
Evidence based case presentation
Evidence based poster / paper presentation in state / national level conference
Publication of paper in national / international indexed journal

**LIST OF JOURNALS**

1. Physical Therapy (APTA)
2. Physiotherapy (CSP)
3. Physiotherapy (Canada)
4. Australian Journal of Physiotherapy
5. New Zealand Journal of Physiotherapy
6. Hong Kong Physiotherapy Journal
8. Journal of Physical Therapy Science
9. Physical Therapy Reviews
10. Physiotherapy - Theory & Practice
11. Physiotherapy - Journal of Indian Association of Physiotherapy
12. Indian Journal of Physiotherapy and Occupational Therapy
13. Physiotherapy Research International
14. Journal of Physical Therapy Education
15. Clinical Kinesiology
17. Journal of Aquatic Physical Therapy
18. Journal of Manual & Manipulative Therapy
20. Physical Therapy in Sport
21. Isokinetics and Exercise Science
22. Journal of Neurologic Physical Therapy
23. Cardio Pulmonary Physical Therapy Journal
24. Journal of Geriatric Physical Therapy
25. Physical & Occupational Therapy in Geriatrics
26. Journal of Women’s Health Physical Therapy
27. Paediatric Physical Therapy
29. Archives of Physical Medicine & Rehabilitation