ANNAMALAI UNIVERSITY
Chidambaram, Tamilnadu

सत्यमेव जयते
MINISTRY OF YOUTH AFFAIRS & SPORTS
Government of India

MYAS - AU Department of Sports Sciences

SYLLABUS

for

MPT (SPORTS PHYSIOTHERAPY)

(Under Choice Based Credit System)

Session: 2019-20

ANNAMALAI UNIVERSITY

Chidambaram, Tamilnadu - 608002

Approved by the

MINISTRY OF YOUTH AFFAIRS AND SPORTS

Government of India

(ii) Subject to change in the syllabi at any time.
Please visit the University website time to time.

MPT SPORTS PHYSIOTHERAPY

REGULATIONS AND SYLLABUS

(For students admitted from academic year 2019-20 onwards)

1. Objectives:

The MPT Sports Physiotherapy course is designed to provide an opportunity to students to apply theory to practice, which creates a highly valuable learning experience with clear vocational and professional significance. The content on MPT Sports Physiotherapy has been carefully designed to provide quality assured professional training to meet the needs of the athletes and to foster life-long learning in participants.

This programme is designed to:

- Develop knowledge and understanding of the principles and applications of exercise physiology and their application to vocational/professional practice.
- Provide an opportunity to critically assess a broad range of theories, methodologies and research findings in Sports Physiotherapy.
- Develop a critical understanding of how to apply theories, strategies and methodologies in appropriate ways.
- Enable the student to develop empirical rigour in identifying solutions to complex problems.
- Develop the appreciation of inter-related scientific concepts that promote understanding of problems and issues in the study of Sports Physiotherapy.
- Provide a forum for the development of research skills and professional competencies in the field of Sports Physiotherapy.

2. Definition of key words:

- **Programme:** An educational program leading to the award of a Degree, diploma or certificate.

- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.

- **Semester:** Each semester consists of 15-18 weeks of academic work equivalent to 90 days of actual teaching days. The odd semester may be scheduled from July to December and even Semester from January to June.

- **CBCS (Choice Based Credit System):** It provides choice for students to select from the prescribed courses.

- **Course:** It is usually referred to as “Papers”. All courses need not carry the same weight. A course may comprise lectures/tutorials/laboratory, work/field, work/outreach activities/project work/vocational training/viva/seminars etc or a combination of some of these.

- **Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching or two hours of practical work.

- **Core course:** Are course that are basic to the subject of the degree. This is a course which is to be compulsorily studied by a student as a core requirement to the completion of the program.

- **Elective Courses:** This is a course that is supportive to the discipline of study, provides an expanded scope, enables exposure to some other domains or nurtures proficiency/skills. Elective papers can be of two types: Discipline Specific Elective (DSE) and Generic Elective (GE). Core / DS Electives will not be offered as Generic Electives. Elective papers can be taken from MOOC courses and credit transfer should be allowed.

- Each of the Core courses and Discipline Specific Elective (DSE) shall be of 4 credits. Credits under DSE may vary (16/12/8) depending upon the number of DSE courses offered across the semesters.

- **Discipline Specific Elective (DSE):** These courses are inter disciplinary in nature and considered similar to core course. And, the students have to choose one course from the option provided for them.

- **Generic Elective (GE):** These courses add generic proficiency to the students. Students have to choose generic elective courses in consultation with the head of the department from the Generic Elective courses offered by other Division of study in Sports Science or from other Departments in university.

3. Course Structure:

This M.Sc. Exercise Physiology is a programme consists of core courses, soft core courses, practical courses, internship and project work. The entire programme carries credit system. The number and distribution of credits for the programme will be decided by the respective faculties.

A programme is divided into two Semesters, Odd Semester and Even Semester. The normal Semester periods are:

Odd Semester: July to November (90 Working days)

Even Semester: December to April (90 Working days)

4. Credits:

The term credit is used to describe the quantum of syllabus for various courses in terms and hours of study. It indicates differential weight age given according to the contents and duration of the courses in the curriculum design. The minimum credit requirement for a two years Master's Programme shall be 90.

One credit of theory equals one lecture hour and
One credit of practical equals two laboratory hours.

5. Courses:

Each Programme may consist of Lectures / Tutorials / Laboratory Work / Seminar / Project Work / Practical Training Report / Viva-Voce etc. Normally, in each of the programmes, credits will be assigned on the basis of the Lectures/Tutorials/Laboratory Work and other form of learning in a 18 week schedule.

6. Eligibility for Admission:

Bachelor's Degree in Physiotherapy from a recognized university with a minimum of 50% marks in aggregate.

7. Grading System:

The term grading system indicates a 10 point scale of evaluation of the performance of students in terms of marks, grade points, letter grade and class.

8. Duration:

The duration for completion of Two Years Master's programme in any subject is four Semesters, but in any case not more than five years from the year of admission.

9. Attendance:

Every teaching faculty handling a course shall be responsible for the maintenance of Attendance Register for candidates who have registered for the course.

The teacher of the course must intimate the Head of the Department at least Seven Calendar Days before the last instruction day in the semester about the particulars of all students who have secured an attendance of less than 75%.

A candidate who has attendance less than 75% shall not be permitted to sit for the end–semester examination in the course in which the shortage exists.

However, it shall be open to the authorities to grant exemption to a candidate who has failed to obtain the prescribed 75% attendance for valid reasons on payment of a condonation fee and such exemptions should not under any circumstances be granted for attendance below 65%.

10. Examination:

There will be two sessional assessment tests and one End–Semester examination during each semester.

Sessional Test–I will be conducted after 35 working days and Sessional Test–II will be conducted after 70 working days.

Sessional Test–I will be a combination of a variety of tools such as class test, assignment and paper presentation that would be suitable to the course. This requires an element of openness. The students are to be informed in advance about the nature of assessment and the procedures. However, the tests are compulsory. Test–I may be for one hour duration. The pattern of question paper will be decided to the respective faculty. Sessional Test–I will carry 12.5% of marks of the entire course.

Sessional Test–II will be held after 70 working days for the syllabi covered between Seventh and Eleventh weeks.

Sessional Test–II will be conducted with a variety of assessment tools. It will also have an element of openness. The students are to be informed in advance about the nature of assessment and the procedures. However, the tests are compulsory. Test–II may be for two hours duration. The pattern of question paper will be decided by the respective Faculty. Sessional Test–II carries 12.5% of marks of the entire course.

There will be one End–Semester Examination of 3 Hours' duration in each course. The end semester examination will cover all the syllabus of the course for 75% of marks.

Each course shall carry a maximum of 100 marks for the purpose of grading. The distribution of marks shall be as follows.

Theory Marks			Practical Marks		
Internal	**External**	**Maximum**	**Internal**	**External**	**Maximum**
25	75	100	40	60	100

11. Non-Credit Course

For the Non-Credit Courses offered in a Semester, a 'Satisfactory Participation Certificate' shall be issued to the Student from the concerned authorities, only after securing ≥ 65% attendance in such a Course. No credits, marks or Letter Grade shall be allotted for the non-credit course.

12. Internship and Field visit:

The Internship / Practical Training shall carry 100 marks and shall be evaluated through internal assessment only. At the end of Internship / Practical training / Summer Project, the candidate shall submit a certificate from the organization where he /she has undergone training and a brief report. The evaluation will be made based on this report and a Viva-Voce Examination, conducted internally by a three member Departmental Committee constituted by the Head of the Department. Certificates (issued by the training centre or Organization) submitted by the candidate shall be attached to the mark list sent by the Head of the Department.

Field visit carry 100 marks and shall be evaluated through internal assessment only. At the end of field visit students has to submit the field visit report. Similarly, like internship evaluation will be made based on this report and a Viva-Voce Examination, conducted internally by a three member Departmental Committee constituted by the Head of the Department. Certificates (issued by the training centre or Organization) submitted by the candidate shall be attached to the mark list sent by the Head of the Department.

13. Evaluation:

Evaluation will be done on a continuous basis. Evaluation may be by Objective Type Questions, Quiz, Short Answers, Essays or a combination of these, but at the end semester it has to be a written examination.

The performance of students in each course is evaluated in terms of percentage of marks (PM) with a provision for conversion to Grade Point (GP). The sum total performance in each semester will be rated by GPA while the continuous performance from the 2nd Semester onwards will be marked by (OGPA).

14. Marks and Grading:

A student cannot repeat the Sessional Assessment Test–I and Sessional Test– II. However, if for any compulsive reason the student could not attend the test, the prerogative of arranging a special test lies with the teacher in consultation with the Head of the Department.

A minimum of 50% marks in each course is prescribed for a pass. A student has to secure 50% minimum in the End Semester Examination.

If a candidate who has not secured a minimum of 50% of marks in a course shall be deemed to have failed in that course.

The student can repeat the End Semester Examination when it is offered next in the subsequent Odd/ Even semesters till the regulations are in force. However, a candidate cannot move to the next semester if he/she has more than six papers as arrears at any point of time.

A candidate who has secured a minimum of 50 marks in all courses prescribed in the programme and earned a minimum of the credits will be considered to have passed the Master's Degree Programme.

15. Grading:

A ten point rating is used for the evaluation of the performance of the student to provide a letter grade for each course and overall grade for the Master's Programme. The letter grade assigned is given below:

Marks	Grade Point	Letter Grade	Class
90+	10	S	Exemplary
85-89	9.0	D	Distinction
80-85	8.5	D	Distinction
75-79	8.0	D	Distinction
72-74	7.5	A	First class
65-69	7.0	A	First class
60-64	6.5	A	First class
55-59	6.0	B	Second class
50-54	5.5	C	Second class
49 or less	-	F	Fail

The successful candidates are classified as follows:

I – Class 60% marks and above in over all percentage of marks (OPM).

II – Class 50–59% marks in over all percentage of marks.

Candidates who obtain 75% and above but below 91% of marks (OPM) shall be deemed to have passed the examination in First Class (Distinction) provided he/she passes all the course prescribed for the programme at the first appearance.

Candidates who obtain 90% and above (OPM) shall be deemed to have passed the examination in First Class (Exemplary) provided he/she passes the entire course prescribed for the programme at the first appearance.

For the Internal Assessment Evaluation the break up marks shall be as follows.

Test	10 marks
Assignment	05 marks
Case Study / Seminar / Short Answers etc.	05 marks
Attendance	05 marks
Total	25 Marks

Marks for Attendance Percentage

90% and above	5 Marks
80 – 89%	4 Marks
70 – 79%	3 Marks

16. Course–Wise Letter Grade:

The percentage of marks obtained by a candidate in a course will be indicated in a letter grade. A student is considered to have completed a course successfully and earned the credits if he/she secures over all grades other than F. A letter grade F in any course implies a failure in that course. A course successfully completed cannot be repeated for the purpose of improving the Grade point.

The F Grade once awarded stays in the grade card of the student and is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will

be indicated in the grade sheet of the Odd/Even semester in which the candidates has appeared for clearance of the arrears.

A student secures F grade in any course which is listed as course as to repeat it compulsorily when the course is offered next. If it is an elective course, a student has the option to repeat it when it is offered next or to choose a new elective if he / she is chosen in the place of failed elective failed optional will be indicated as dropped in the subsequent grade card.

If a student secures F Grade in the Project Work/ Field Work/Practical Work/ Dissertation, either he/she shall improve it and resubmit it if it involves only rewriting incorporating the clarification of the evaluators of he/she can re–register and carry out the same in the subsequent semesters for evaluation.

17. Withdrawal from the course by the student:

Within two weeks from the date of commencement of the semester.

PROGRAM OUTCOMES (POs):

By the end of the program, the students will be able to

PO1	**Domain knowledge**: Demonstrate knowledge of basic concepts, principles and applications of the specific science discipline.
PO2	**Resource Utilisation.** Cultivate the skills to acquire and use appropriate learning resources including library, e-learning resources, ICT tools to enhance knowledge-base and stay abreast of recent developments.
PO3	**Analytical and Technical Skills:** Ability to handle/use appropriate tools/techniques/equipment with an understanding of the standard operating procedures, safety aspects/limitations.
PO4	**Critical thinking and Problem solving:** Identify and critically analyse pertinent problems in the relevant discipline using appropriate tools and techniques as well as approaches to arrive at viable conclusions/solutions.
PO5	**Project Management**: Demonstrate knowledge and scientific understanding to identify research problems, design experiments, use appropriate methodologies, analyse and interpret data and provide solutions. Exhibit organisational skills and the ability to manage time and resources.
PO6	**Individual and team work**: Exhibit the potential to effectively accomplish tasks independently and as a member or leader in diverse teams, and in multidisciplinary settings.
PO7	**Effective Communication**: Communicate effectively in spoken and written form as well as through electronic media with the scientific community as well as with society at large. Demonstrate the ability to write dissertations, reports, make effective presentations and documentation.
PO8	**Environment and Society**: Analyse the impact of scientific and technological advances on the environment and society and the need for sustainable development.
PO9	**Ethics**: Commitment to professional ethics and responsibilities.
PO10	**Life-long learning:** Ability to engage in life-long learning in the context of the rapid developments in the discipline.

PROGRAM SPECIFIC OUTCOMES (PSOs):

By the end of the program, the students will be able to

PSO1	Examine the essential health, safety and ethical aspects to be considered when undertaking applied sport and exercise biomechanics investigations.
PSO2	Manipulate, interpret and report conclusions related to a range of data and applied problems.
PSO3	Evaluate appropriate laboratory equipment to enable a sport and exercise biomechanics investigation to be undertaken.
PSO4	Integrate advanced scientific and professional skills in the context of sport and exercise biomechanics.

MAPPING OF PROGRAMME SPECIFIC OUTCOMES WITH PROGRAMME OUTCOMES

By the end of the program, the students will be able to

Programme Specific Outcomes (PSOs)	Programme Outcomes (POs)									
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
PSO1	3	3	2	3	3	2	3	2	3	3
PSO2	3	2	3	2	3	3	2	3	3	3
PSO3	3	3	3	3	3	2	3	2	3	3
PSO4	3	3	3	3	3	3	3	2	3	3

ANNAMALAI UNIVERSITY

MYAS-AU Department of Sports Sciences
MPT Sports Physiotherapy
Programme Code: SSPO26

Programme Structure
(For Students admitted from the academic year 2019-2020)

Course Code	Course Title	Hours / Week		C	Marks		
		L	P		CIA	ESE	Total
Semester-I							
19MSPC101	Core 1: Applied Basic Medical Sciences	4		4	25	75	100
19MSPC102	Core 2: Kinesiology & Biomechanics	4		4	25	75	100
19MSPC103	Core 3: Assessment & Evaluation in Sports Physiotherapy	4		4	25	75	100
19MSPC104	Core 4: Research & Educational Methodology	4		4	25	75	100
19MSPP105	Core 5: Clinical Training–I		10	5	60	90	150
19MSPD106	Dissertation-I: Research: Review of Literature		4	4*	*** C.F.**		
	Elective 1: Interdepartmental Elective	3		3	25	75	100
	Total Credits in Semester-I			**28**			
Semester-II							
19MSPC201	Core 5: Applied Para Clinical Sciences	4		4	25	75	100
19MSPC202	Core 6: Sports Biomechanics & Kinanthropometry	4		4	25	75	100
19MSPC203	Core 7: Physiotherapy Methods	4		4	25	75	100
19MSPC204	Core 8: Sports Traumatology	4		4	25	75	100
19MSPP205	Core 9: Clinical Training–II		10	5	60	90	150
19MSPD206	Dissertation-II: Research: Posting to collect the pilot data		6	6*	*** C.F.**		
	Elective 2: Interdepartmental Elective	3		3	25	75	100
19MSPE207	Elective 3: Department Elective	3		3	25	75	100
	Total Credits in Semester-II			**33**			

L- Lectures; P- Practical; C- Credits;

CIA- Continuous Internal Assessment; ESE- End-Semester Examination

***Carried Forward**

Note:

1. **Students shall take both Department Electives (DEs) and Interdepartmental Electives (IDEs) from a range of choices available.**
2. **Students may opt for any Value-added Courses listed in the University website.**

Course Code	Course Title	Hours/Week		C	Marks		
		L	P		CIA	ESE	Total
Semester-III							
19MSPC301	Core 9: Sports Physiotherapy Methods	4		4	25	75	100
19MSPC302	Core 10: Medical Aspects of Sports Medicine	4		4	25	75	100
19MSPC303	Core 11: Exercise Physiology & Nutrition	4		4	25	75	100
19MSPC304	Core 12: Non–Traumatic Medical Conditions of Athletes	4		4	25	75	100
19MSPP305	Clinical Training III		12	6	60	90	150
19MSPD306	Dissertation-III:(Research data collection And compilation)		6	6*	*** C.F.**		
	Elective 4: Interdepartmental Elective	3		3	25	75	100
	Total Credits in Semester-III			**31**			
Semester-IV							
19 MSPC401	Core 13: Sports Psychology	4		4	25	75	100
19 MSPC402	Core 14: Applied Exercise Physiology	4		4	25	75	100
19 MSPC403	Core 15: Life Style Medicine	4		4	25	75	100
	Core 16: Current Concepts in Sports Medicine	4		4	25	75	100
19 MSPP404	Core 17: Clinical Training IV		16	8	60	90	150
19 MSPD405	Dissertation-IV: (Thesis submission)		8	8			600
	Project Report	4+6+6+8 = 24			240	240	
	Viva-Voce					120	
	Total Credits in Semester-IV			**32**			
	Grand Total Credits			**124**			
	Value Added Courses						

L- Lectures; P- Practical; C- Credits;

CIA- Continuous Internal Assessment; ESE- End-Semester Examination

***Carried Forward**

Note:

1. **Students shall take both Department Electives (DEs) and Interdepartmental Electives (IDEs) from a range of choices available.**
2. **Students may opt for any Value-added Courses listed in the University website.**

Dissertation

The topic of dissertation will be allocated in first Semester and candidate will work for all four semesters and submit a written thesis in 4th semester. The final dissertation will be evaluated at the end of fourth semester for the total work done in all four semesters and grades will be awarded at the end of fourth semester.

Dissertation will include the following work. The credit hours are reflected in each semester scheme. At the end of first semester students are expected to have a research proposal ready. At the end of second semester the students are expected to be familiar with equipment handling and pilot study. At the end of third semester data collection, analysis and results should be completed. In fourth semester the work should be presented in the form of final dissertation and manuscripts should be ready for communication.

Elective Courses

Department Electives (DE)

Sl. No	Course Code	Course Title	Hours/ Week		C	Marks		
			L	P		CIA	ESE	Total
1	19MSPE207.1	Evidence Based Practice in Allied Health Sciences	3	0	3	25	75	100
2	19MSPE207.2	Women Health and Exercise	3	0	3	25	75	100

Interdepartmental Electives (IDE)

S. No.	Course Code	Course Title	Department	Hours/week		C	Marks		
				L	P		CIA	ESE	Total
1.	19 SOSE 115.1	Soft Skills	English	3	0	3	25	75	100
2.	19 MATE 215.1	Discrete Mathematics	Mathematics	3	0	3	25	75	100
3.	19 MATE 215.2	Numerical Methods		3	0	3	25	75	100
4.	19 MATE 315.1	Differential Equations		3	0	3	25	75	100
5.	19 STSE 215.1	Statistical Methods	Statistics	3	0	3	25	75	100
6.	19 STSE 215.2	Mathematical Statistics		3	0	3	25	75	100
7.	19 STSE 315.1	Bio-Statistics		3	0	3	25	75	100
8.	19 PHYE 215.1	Classical Mechanics and Special Theory of Relativity	Physics	3	0	3	25	75	100
9.	19 PHYE 215.2	Physics of the Earth		3	0	3	25	75	100
10.	19 PHYE 315.1	Bio-Medical Instrumentation		3	0	3	25	75	100
11.	19 PHYE 315.2	Energy Physics		3	0	3	25	75	100
12	19 CHEE 215.1	Applied Chemistry	Chemistry	3	0	3	25	75	100
13	19 CHEE 315.1	Basic Chemistry		3	0	3	25	75	100
14	19 CHEE 315.2	Instrumental Methods of Analysis		3	0	3	25	75	100
15	19 BOTE 215.1	Plant Tissue Culture	Botany	3	0	3	25	75	100
16	19 BOTE 215.2	Plant Science – I		3	0	3	25	75	100
17	19 BOTE 315.1	Gardening and Horticulture		3	0	3	25	75	100
18	19 BOTE 315.2	Plant Science – II		3	0	3	25	75	100
19	19 ZOOE 215.1	Animal Culture Techniques	Zoology	3	0	3	25	75	100
20	19 ZOOE 315.1	Environmental Science		3	0	3	25	75	100
21	19 GEOE 215.1	Environmental Geosciences	Earth Sciences	3	0	3	25	75	100
22	19 GEOE 315.1	Applied Geophysics		3	0	3	25	75	100

23	19 MIBE 315.1	Microbiology	Microbiology	3	0	3	25	75	100
24.	19 CISE 215.1	R Programming	Computer & Information Science	3	0	3	25	75	100
25	19MSSE206	Fundamentals of Sports Sciences	Department of Sports Sciences / Division of Sports Training & Sports Nutrition	3	0	3	25	75	100
26	19MSSE307	Basics of Strength and Conditioning		3	0	3	25	75	100
27	19MEPE206	Science of Exercise	Department of Sports Sciences / Division of Exercise Physiology	3	0	3	25	75	100
28	19MEPE306	Exercise and Obesity		3	0	3	25	75	100

Electives Offered to Other Departments

Interdepartmental Electives (IDE)

S. No.	Course Code	Course Title	Department	Hours/ week		C	Marks		
				L	P		CIA	ESE	Total
1	19MSPE107	Sports Injury & Rehabilitation	Sports Sciences / Division of Sports Physiotherapy	3	0	3	25	75	100
2	19MSPE407	Exercise and Elderly Population		3	0	3	25	75	100

Value Added Course

S. No.	Course Code	Course Title	Department	Hours/ week		C	Marks		
				L	P		CIA	ESE	Total
1	-	-	-	-	-	-	-	-	-

MPT (Sports Physiotherapy) (SEMESTER-I)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC101: Core 1: Applied Basic Medical Sciences

L	T	P	Max Marks: 100
4	0	0	

UNIT I

Applied General Clinical Anatomy

1. **Anatomy of the Nerve Injuries**
   a. Anatomical and Physiological loss resulting from nerve injury.
   b. Relaxation of nerves
   c. Peripheral nerve entrapment
2. **Anatomical Angles and stiff joints**
   a. Anatomical Angles
   b. Optimal attitude for stiff joints
   c. Snapping joints

UNIT II

1. **The pathology of bones in terms of anatomy**
   a. Anatomical facts regarding bones
   b. Anatomical disturbances in various bone pathologies
2. **Pathophysiology of certain diseases**
   a. Infections of the hand
   b. Lesions of supraspinatous, subdeltoid bursae and Bicipital Tendinitis
   c. Low back pain
   d. Sciatica
   e. Lesions of inter–vertebral disk

Section-C

1. **Neuromuscular System**
   f. Basic physics of membrane potentials
   g. Mechanism of muscle contraction
   h. Sources of energy for muscle contraction
   i. Neural control of movement
2. **Temperature regulation**
   Regulation of body temperature

UNIT III

Applied General Physiology

1. **Blood**
   a. The various components of blood
   b. Viscosity correlation
   c. Oxyhemoglobin Dissociation curves
   d. Interrelationship between pressure flow and resistance
   e. Pressure volume curves
   f. Stress relaxation of vessels
2. **Cardiovascular system**
   a. Physical characteristics of systemic circulation
   b. Pressure pulses

c. Oxygen demand theory of local blood flow circulation
d. Nervous control of blood circulation
e. Humorous control of blood circulation
f. Mechanisms of arterial pulse regulation
g. Hypertension
h. Cardiac output and its regulation
i. Methods of measuring cardiac output
j. Normal coronary blood flow along with variations
k. Physiological basis of ischemic heart disease
l. The cardiac reserve
m. Physiological causes of shock

Section-E

Applied General Physiology

1. Respiratory System:

a. Review of mechanics of respiration
b. Pulmonary volumes and capacities
c. Transport of oxygen in blood
d. Carbon dioxide in blood
e. Regulation of respiration
f. Methods of studying respiratory abnormalities

2. Endocrine System:

a. Pituitary hormones and their functions
b. Thyroid hormones
c. Adrenocortical hormones
d. Insulin Glucagon hormones
e. Parathyroid hormones

Unit VI

Relation of Anatomical Landmark and Assessment,, Exercise for shoulder complex and pelvic complex, Blood investigation and interpretation and other investigation Vo2 Max, Target Heart rate, Metabolic Equvalent,

References:

1. Synopsis of Surgical Anatomy – John Wright & Sons, Bristol
2. Gray's Anatomy – Williams & Warwick – Churchill Livingstone.
3. Grants – Methods of Anatomy – Basmajian & Sloncker – Williams & Wilkins.
4. Clinical Anatomy for Medical Students – Snells – Lippincott.
5. Textbook of Medical Physiology – Guyton – Mosby.
6. Pathologic Basis of Diseases – Robbins, Kotran and Kumar – W.B. Saunders.
7. The Pharmacological basis of Therapeutics – Goodman and Gilman – MacMillan.
8. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publications – Bombay.
9. Pathology implications for Physical Therapists – Goodmann & Boissonnault– W. B. Saunders.
10. Davidsons – Principles and Practice of Medicine– Edward – Churchill Livingstone.
11. Hutchinsons – Clinical Methods of Medicine –Swash – Bailliere Tindall.
12. Systems of Orthopedics – Apleys – Butterworth Heinmann.
13. Outline of Orthopedics – Adams – Churchill Livingstone.
14. Outline of Fractures – Adams – Churchill Livingstone.
15. Tureks – Orthopedics – Weinsteil & Buckwalter – Lippincott Publications.
16. Text Book of Radiology – Sutton D. – Churchill Livingstone.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concepts of Anatomy & Physiology

CO2: Understand the principles of Anatomy & Physiology

CO3: Understand the basic components of Anatomy and Physiology and its application

CO4: Understand the concept and the factors influencing it.

CO5: Understand the role of tactics in physiotherapy application

CO6: : To Enhance and Refresh knowledge about Anatomy and Physiology .
Outcome:
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a) **Outcome Mapping**

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	3	3	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	2	-	-	-	3	3	-	3	3	3	-	-	2	3	-
CO3	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO4	3	-	3	-	-	-	3	3	-	3	3	3	-	-	3	3	-
CO5	3	-	3	-	-	-	3	2	-	3	3	3	-	-	3	3	-
CO6	3	-	3	-	-	-	3	3	-	3	2	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-I)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC102: Core 2: Kinesiology & Biomechanics

L	T	P	Max Marks: 100
4	0	0	

Section-A

Introduction to Kinematics

a) Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
b) Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.
c) Review of linear and angular kinematics

Section-B

Mechanics of Musculoskeletal System

a) Tissue loads, response of tissues to forces- Stress, Strain, Stiffness and mechanical strength, visco elasticity
b) Physical Properties of bone, cartilage, tendon and ligaments, functional adaptation under pathological conditions.

Section-C

a) Impaired neuromuscular control, muscular force regulation in
Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Section-D

Introduction

a) Nature and importance of Biomechanics in Physiotherapy
b) Principle of Biomechanics

Movement Analysis

a) Biomechanics of shoulder and shoulder complex, elbow complex, wrist and hand complex
b) Biomechanics of pelvic, hip, knee, ankle & foot complex
c) Biomechanics of spine

Section-E

Movement Analysis

a) Neuro biomechanics
b) Posture and Gait analysis
c) Biomechanical Analysis & Techniques – Force platforms

References:

1. Brunnstrom – Clinical Kinesiology, F.A. Davis.
2. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi, 1997, Brown & Benchmark.
3. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
4. White and Punjabi – Biomechanics of Spine – Lippincott.
5. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
6. Mishra: Clinical Neurophysiology, B.I. Churchill Livingstone.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the history and basic concepts of sports training and Biomechanics

CO2: Understand the principles of sports Training and Biomechanics

CO3: Understand the basic components of fitness and Biomechanics methods of applying it.

CO4: Understand the concept of Injury Prevention and Treatment and related factors influencing it.

CO5: Understand the role of tactics in sports training and Biomechanics

CO6: Enhance knowledge about Various Training Method in sports and biomechanics.
Outcome: To utilize acquired Knowledge in clinical Decision Making and further learning process

.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	3	2	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	3	-	-	-	3	2	-	3	3	3	-	-	3	3	-
CO3	3	-	3	-	-	-	3	3	-	3	2	3	-	-	3	3	-
CO4	3	-	3	-	-	-	3	2	-	3	3	3	-	-	3	3	-
CO5	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-
CO6	3	-	3	-	-	-	3	3	-	3	3	2	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-I)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC103 *ASSESSMENT & EVALUATION IN SPORTS PHYSIOTHERAPY*

L	T	P	Max Marks: 100
4	0	0	

Section-A

1. Importance of assessment – subjective and objective & evaluation, Methods of evaluation – Interview, Clinical Examination,

Section-B

1. Outcome measures - Reliability & Validity of the tests, Investigative Procedures, Field Tests.
2. Evaluation of Physical Fitness.

Section-C

1. Musculoskeletal screening
2. Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand.

Section-D

1. Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot
2. Assessment of spinal column: Cervical, thoracic and lumboscaral, Tests of neural tension.

Section-E

1. Assessment of Gait deviations
2. EMG evaluation, diagnostic and kinesiological

Practicals: The Students will undergo clinical training in different training centres for assessment and diagnosis of different injuries of sports persons.

References:

1. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry – F.A. Davis.
2. Dvir: Isokinetics: Muscle Testing, Interpretation and Clinical Applications, W.B. Saunders.
3. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
4. Lillegard, Butcher & Rucker: Handbook of Sports Medicine: A symptom – Oriented Approach, Butterworth & Heinemann
5. Baker: The Hughston Clinic Sports Medicine Book, Williams & Wilkins.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concepts of General evaluation

CO2: Understand the principles of evaluation procedures

CO3: Understand the basic components of evaluation and methods of Assessing it it.

CO4: Understand the concept of sports evaluation and the essential component .

CO5: Understand the role of Evaluation and utilization for proper Diagnosis and Management

CO6: To utilize acquired Knowledge in clinical Decision Making and further learning process

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	3	2	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	3	-	-	-	3	2	-	3	3	3	-	-	3	3	-
CO3	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO4	3	-	3	-	-	-	2	3	-	3	2	3	-	-	3	3	-
CO5	3	-	3	-	-	-	3	3	-	3	2	3	-	-	3	3	-
CO6	3	-	3	-	-	-	3	3	-	3	3	2	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-I)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC104*: RESEARCH & EDUCATIONAL METHODOLOGY*

L	T	P	Max Marks: 100
4	0	0	

Section-A

1. **Basic concepts-**Importance of research in clinical practice, Problem identification,Ethical issues in research, Literature review, meta-analysis
2. **Types of Research-**Qualitative & Quantitative, Descriptive & Experimental,Longitudinal & Cross–sectional, Survey Research.

Section-B

1. **Sample Designs-**Types of sampling, Reliability, Validity, Variables, sample size.
2. **Processing and analysis of data-**Central tendency, Dispersion, Correlation, regressionanalysis, multiple correlation and regression.

Section-C

1. **Sampling and testing of hypothesis-**Concept of probability, Standard deviation,confidence intervals, null and alternate hypothesis, level of significance, correlation coefficients, ANOVA, Tukey's HSD.
2. **Non parametric tests-**Fisher Irwin test, Mc Nemar test, Wilcoxon Mali test, MannWhitney test, Kruskal Walis test, Spearman's rank correlation.

Section-D

1. **Define-**Symposia, Seminar, Conference, Journal, Thesis, Book, Key elements ofscientific writing.
2. **Presenting Research-**Strategies of paper writing, Design of paper writing, Tactics ofpaper writing, Reasons for rejection, Where to publish, Poster presentation (Poster space, Standard format), Plagiarism.
3. **Oral Presentations at Conferences/Seminars-**Preparing presentation, Duration ofpresentation, What to present

Section-E

Educational Methodology-Principles and methods of teaching with respect tophysiotherapy students and client: Strategies and planning of teaching, curriculum development, formation of course objective, time management, role of Audio – visual aids, method of knowledge dissemination.

Practicals:

The student will be required to review the literature thoroughly and prepare a research proposal for dissertation in consultation with his/her supervisor by the end of the semester.

References:

1. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications.
2. Colton: Statistics in medicine, Little Brown Company, Boston.
3. Mahajan: Methods in Biostatistics, Jay Pee Brothers.
4. Vincent: Statistics in Kinesiology, Human Kinetics.
5. Hicks: Research for Physiotherapists, Churchill Livingstone

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concepts of bio-statistics and research methodology

CO2: Understand the principles of bio –statistics and research methodology

CO3: Understand the basic components for appropriate clinical result and in the field Research .

CO4: Understand the concept of application and interpretation for enumerating better result .

CO5: Understand the role of statistics and Research methodology in the field of study

CO6: to utilize acquired Knowledge in the field of Research, Guidance and projects

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	3	2	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO3	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-
CO4	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO5	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-
CO6	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC201*: APPLIED PARA CLINICAL SCIENCES*

L	**T**	**P**	**Max Marks: 100**
4	**0**	**0**	

Section-A

Pathology:

1. Inflammation and repair
2. "Failed" healing responses
3. Regional considerations of Inflammation & repair of soft tissue injuries.

Section-B

Pharmacology:

1. Principles of drug action.
2. Basic pharmacokinetics and Pharmacodynamics.
3. The use of drugs in various musculoskeletal disorders.

Section-C

Radiology:

1. Basics of radiology including ultrasonography CT & MRI scanning
2. Imaging of the head and neck.
3. Imaging of spine.
4. Imaging of upper limb (shoulder, elbow, wrist)

Section-D

Radiology:

1. Imaging of pelvis, hip and thigh.
2. Imaging of Patello Femoral Joint & Knee joint.
3. Imaging of the lower leg, foot and ankle.

References:

1. The Pharmacological basis of Therapeutics – Goodman and Gilman – MacMillan.
2. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publications – Bombay.
3. Davidsons – Principles and Practice of Medicine– Edward – Churchill Livingstone.
4. Systems of Orthopedics – Apleys – Butterworth Heinmann.
5. Outline of Orthopedics – Adams – Churchill Livingstone.
6. Outline of Fractures – Adams – Churchill Livingstone.
7. Tureks – Orthopedics – Weinsteil & Buckwalter – Lippincott Publications.
8. Text Book of Radiology – Sutton D. – Churchill Livingstone.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concepts of pathology, radiology ,biochemistry and pharmacology

CO2: Understand the principles of pathology, radiology ,biochemistry and pharmacology

CO3: Understand the basic components of Anatomy and Physiology and its implication on diagnosis and narrow down the management

CO4: Understand the concept and the factors influencing it.

CO5: Understand the role of tactics in physiotherapy application

CO6: : To Enhance and Refresh knowledge about pathology, radiology ,biochemistry and pharmacology.

b) **Outcome Mapping**

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	3	2	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	3	-	-	-	3	3	-	3	2	3	-	-	3	3	-
CO3	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO4	3	-	2	-	-	-	3	3	-	3	3	3	-	-	3	3	-
CO5	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO6	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC202: ***SPORTS BIOMECHANICS AND KINANTHROPOMETRY***

L	**T**	**P**	**Max Marks: 100**
4	**0**	**0**	

Section-A

1. Aspects of biomechanical analysis of sports movements
    a. Movement descriptors
    b. Structural analysis of movements, temporal and phase analysis
2. Principles and Application in Sports
    a. Biomechanics of running: Kinematic and kinetic phases, mechanical principles to study running mechanics, pathomechanical errors etc.
    b. Biomechanics of rowing: Phases of rowing, mechanical factors to improve rowing performance, rowing as exercise for fitness etc.

Section-B

a. Biomechanics of throwing and swimming: Kinematic and kinetic phases of throwing, mechanical factors to improve throwing performance, pathomechanical errors etc. basic principles of fluid mechanics, phases of swimming mechanics, pathomechanical errors etc.
d. Biomechanics of jumping: Biomechanical components of jumping, factors to improve jump performance etc.
e. Biomechanics of cycling

Section-C

1. Introduction
    Significance of kinanthropometric knowledge in sports medicine.
2. Age determination
    a. Skeletal age
    b. Dental age
3. Body measurements
    a. Gross size and mass
    b. Lengths or heights of body parts
    c. Circumstances of body parts
    d. Skinfold thickness
4. Kinanthropometric study group measurements
    a. Planes of the body
    b. Axes of the body
    c. Landmarks on the body

Section-D

1. Body proportions
    a. Body mass index
    b. The phantom stratagem
    c. The Z – scores
    d. The O – scale system

2. Body composition
    a. Different Body composition
    b. Various methods to estimate body composition
        i. Water displacement method
        ii. Under water weighing methods
        iii. Kinanthropometric determination of the body composition (skinfold thickness)
        iv. Application of surface anthropometry (the body profile)
        v. Bioelectrical impedance analysis
        vi. Ultrasound assessment of fat
        vii. Arm X–ray assessment of fat
        viii. Computed tomography (CT) assessment of fat

Section-E

1. Somatotyping
    a. Sheldon's method of somatotyping
        i. Critical evaluation of Sheldon's method of somatotyping

    b. Heath – Carter method of somatotyping
        ii. The rating scales
        iii. Kinanthropometric measurements
        iv. First, Second and Third Components
        v. Somatotyping
        vi. Somatotype distribution

2. Growth, maturation and physical performance

Practicals:

The students will undergo hands on training on various Kinanthropometry equipment for body composition analysis, somatotyping and age determination.

References:

1. Singh and Malhotra: Kinanthropometry, Lunar Publications
2. H.S. Sodhi: Sports Anthropometry (A Kinanthropometric Approach), Anova Publications
3. Verma and Mokha: Nutrition, Exercise and Weight Reduction, Exercise Science Publication Society
4. Ostym, Beunen and Simons: Kinanthropometry II, University Park Press, Baltimore
5. James A.P. Day: Perspectives in Kinanthropometry, Human Kinetics Publishers, Inc. Champaign, Illinois
6. L.S. Sidhu et. al: Sports Sciences – Health, Fitness and Performance, IASSPE
   L.S. Sidhu et. al: Trends in Sports Sciences, IASSPE

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the history and basic concepts of Biomechanics and Kinanthropometry

CO2: Understand the principles of Biomechanics and Kinanthropometry

CO3: Understand the basic components of Biomechanics and Kinanthropometry methods of applying it.

CO4: Understand the concept of Injury Prevention and Treatment and Assessing factors influencing it.

CO5: Understand the role of tactics in Biomechanics and Kinanthropometry

CO6: Enhance knowledge about Various Training Method in sports and biomechanics.
Outcome: To utilize acquired Knowledge in clinical Decision Making and further learning process

.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PS O1	PS O2	PS O3	PS O4	PS O5	PS O6	PS O7
CO1	3	2	3	-	-	-	-	3	3	-	3	-	-	3	3	3	3
CO2	3	-	2	-	-	-	3	3	-	3	3	3	-	-	3	3	-
CO3	3	-	3	-	-	-	2	3	-	3	3	3	-	-	3	3	-
CO4	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-
CO5	3	-	3	-	-	-	3	2	-	3	3	3	-	-	3	3	-
CO6	3	-	3	-	-	-	3	3	-	2	3	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC203*: PHYSIOTHERAPY METHODS*

L	**T**	**P**	**Max Marks: 100**
4	**0**	**0**	

Section-A

1. Define Rehabilitation, Goals and Objectives of Rehabilitation in Sports, Clinical Evaluation phases of rehabilitation. (multidisciplinary approach)
2. Prehabilitation
3. Modern concepts in rehabilitation.

Section-B

4. Factors affecting the joint range of motion prevention of stiffness, methods of joint mobilization.
   a. Testing for tightness and contracture of soft–tissue structures.
   b. Techniques of mobilizing the various joints of the body.
   c. Types of Muscle Contractions and Muscle work, Strength of Muscle Contraction in terms of Motor units

Section-C

a. Definition, details of effects and uses of therapeutic exercises.
b. Dynamic Exercises
c. Plyometric Exercises
d. Isokinetic Exercises
e. Manipulative Techniques
f. Kinetic chain exercises

Section-D

a. Group action of muscles and its implication in designing an exercise program.
b. Causes of muscle weakness. Prevention of disuse atrophy, Principles of treatment to increase muscle strength and function.
c. Techniques of strengthening with respect to regional consideration.
d. Various methods of progressive resisted exercise.
e. Aquatic therapy in sports.

Section-E

1. Neuromuscular Training: Neuromuscular control, methods for improving neuromuscular control, proprioception and Kinesthetic sensation following different sport injuries.
2. Principles and application of neuromuscular facilitation techniques including PNF in sports.
3. Health club & fitness: Concept, group therapy
4. Physical Therapy and law: Medico legal aspects of physiotherapy, liability, negligence, malpractice, licensure, work man compensation
5. Morale and Ethics: Ethical Analysis of moral problem, ethical issues in physiotherapy

Practicals:

1. The students will undergo clinical training in the Health Centre on various apparatus of physical medicine. This training will constitute major part of the practical examination.
2. Clinical attachments will also be provided in different sports training centres all over India.

References:

1. Sinha A.G.: Principle and Practices of Therapeutic Massage – Jaypee Brothers, New Delhi
2. Gardiner M. Dena: The Principles of Exercise Therapy – CBS Publishers, Delhi.
3. Kisner and Colby: Therapeutic Exercises – Foundations and Techniques, F.A. Davis.
4. Basmajian John V.: Therapeutic Exercise, Williams & Wilkins.
5. Thomson et al – Tidy's Physiotherapy: Butterworth – Heinmann.
6. Wood & Baker: Beard's Massage, W.B. Saunders.
7. Kendall: Muscles – Testing and Function – Williams & Wilkins
8. Daniels and Worthinghams: Muscle Testing – Techniques of Manual Examination, W.B. Saunders.
9. First Aid to Injured: St. John's Ambulance Association.
10. William E. Prentice: Rehabilitation Techniques – Mosby.
11. Werner Kuprian: Physical Therapy for Sports, W.B. Saunders.
12. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry – F.A. Davis.
13. Andrea Bates and Norm Hanson: Aquatic Exercise Therapy, W.B. Saunders.
14. Dvir: Isokinetics: Muscle Testing, Interpretation and Clinical Applications, W.B. Saunders.
15. Hartley: Practical Joint Assessment, A Sports Medicine Manual, upper and lower quadrants, C.V. Mosby.
16. Kennedy: Mosby's Sports Therapy Taping Guide.
17. Malone: Orthopeadic and Sports Physical Therapy, C.V. Mosby.
18. Albert: Eccentric Muscle Training in Sports and Orthopeadics, W.B. Saunders.
19. Voss et al – Proprioceptive Neuromuscular Facilitation – Patterns &Techniques – Williams & Wilkins.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the types of exercises used for therapy.

CO2: Understand the different types of modalities used in intervention.

CO3: Understand the effect of systematic therapy intervention on different condition.

CO4: Understand about recent advancement and its beneficial effects.

CO5: Understand the sports massage sequence and its application in various sports injuries

CO6: To utilize acquired Knowledge in clinical Decision Making and further Treatment process.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	2	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	3	2	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 5	3	**-**	-	2	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC204*: SPORTS TRAUMATOLOGY*

L	**T**	**P**	**Max Marks: 100**
4	**0**	**0**	

Section-A

1. Pre–participation examination
2. Factors influencing sports injuries
3. prevention of sports injuries

Section-B

1. Common acute and overuse injuries of:
   a. Shoulder girdle, Shoulder, Arm
   b. Elbow, Forearm
   c. Wrist & hand

Section-C

Common acute and overuse injuries of:

a. Pelvis, hip, thigh, knee, leg, ankle & foot
d. Spine
e. Head

Section-D

1. Sporting emergencies & first aid
2. Cardio pulmonary Resuscitation; Shock management, Internal and External bleeding, Splinting, Stretcher use–Handling and transfer, Management of Cardiac arrest, Acute asthma, epilepsy, drowning, burn, Medical management of mass participation. Heat stroke and Heat illness.

Section-E

Sports specific injuries, with special emphasis on the specific risk factor, nature of sports, kind of medical intervention anticipated and prevention with respect to individual sports

a. Individual events: Track & Field
b. Team events: Hockey, Cricket, Football etc.
c. Contact and Non–contact sports
d. Water sports

Clinical Training

1. Students will undergo Field Training with Sportsmen of the University.
2. They will attend physiotherapy clinic in the Health Centre.
3. The students will accompany sports teams for National sporting competitions.
4. No student will refuse clinical attachment even during the vacations.

References:

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
3. Torg, Welsh & Shephard: Current Therapy in Sports Medicine III – Mosby.
4. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
5. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
6. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
7. Gould: Orthopaedic Sports Physical Therapy, Mosby.
8. C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinmann.
9. D. Kulund: The Injured Athlete, Lippincott.
10. Nicholas Hershman: Vol. I The Upper Extremity in Sports Medicine.
    Vol. II The Lower Extremity and Spine in Sports Medicine.
    Vol. III The Lower Extremity and Spine in Sports Medicine.
    Mosby.
11. Lee & Dress: Orthopaedic Sports Medicine – W.B Saunders.
12. K. Park: Preventive and Social Medicine – Banarsi Dass Bhanot – Jabalpur..
13. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
14. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
15. Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic knowledge about various injuries.

CO2: Understand the different types of injuries in young athlete for prevention and therapy.

CO3: Understand the different types of injuries in upper quadrant in players for prevention and therapy

CO4: Understand the different injuries around lower quadrant of upper extremity for effective therapy intervention .

CO5: Understand the injuries in smaller regions for effective intervention

CO6: Enhance knowledge about Sports Injury and Rehabilitation

.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	2	-	3	-	-	3	3	-	3	3	-	3	3	3	3	3
CO 2	3	3	-	2	-	-	3	3	-	3	3	3	-	-	3	3	-
CO 3	3	-	-	3	-	-	3	2	-	3	3	3	-	3	3	3	-
CO 4	3	-	-	2	-	-	3	3	-	3	3	3	-	3	3	3	-
CO 5	3	-	-	3	-	-	3	2	-	3	3	3	-	3	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPE207.1*: EVIDENCE BASED PRACTICE IN ALLIED HEALTH SCIENCES (ELECTIVE)*

L	T	P	Max Marks: 100
3	0	0	

Section-A

1. Introduction to evidence– based complementary medicine
2. Evidence–based health care
3 .Evidence–based practices
4. Evidence–based decision making and management

Section-B

Types of evidence
- a. Definition of evidence
- b. Forms of evidence
- c. Randomized controlled trials

Section-C

Types of evidence
- a. Case–control studies
- b. Cohort studies

Section-D

1. Applying the evidence
   - a. Pathways, guidelines and protocols
   - b. Future directions for clinical effectiveness
2. Evaluation of effectiveness and efficiency of the process

Section-E

1.Principles of evidence-based Physiotherapy practice

2.Elements of evidence Appraising the evidence

3 Evidence in practice

References:

1. Martin Dawes, Philip Davies, and Alistair Gray, Evidence–Based Practice: A Primer for Health Care Professionals. Elsevier Publication.
2. Albert R. Roberts and Kenneth R. Yeager, Evidence–Based Practice Manual: Research and Outcome Measures in Health and Human Services, Oxford University Press.
3. Allen Rubin, Practitioner's Guide to Using Research for Evidence–Based Practice. John Willey & Sons Publication.
4. Domhnall MacAuleyThomas M Best, Evidence–based Sports Medicine. BMJ Books.
5. Kathryn Refshauge and Elizabeth Gass, Musculoskeletal Physiotherapy: Its Clinical Science and Evidence–Based Practice. Churchill Livingstone.
6. Allen Rubin, Statistics for Evidence–Based Practice and Evaluation. Cengage learning.
7. Bernadette Melnyk, Ellen Fineout–Overholt, Evidence–Based Practice in Nursing and Healthcare: A Guide to Best Practice, Lippincott Williams & Wilkins.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the recent advancement .

CO2: Understand the exercise effect on different age process for betterment of therapy.

CO3: Understand the concept of advance equipment in Rehabilitation

CO4: Understand. The concept involved in muscle stabilization of torso

CO5: Understand the evidence based practice in rehabilitation

CO6: upgrade the knowledge and Utilizing the service for betterment of Sports Society.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	2	-	3	-	-	3	3	-	3	3	-	3	3	3	3	3
CO 2	3	3	-	3	-	-	3	3	-	2	3	3	-	-	3	3	-
CO 3	3	-	-	3	-	-	3	3	-	3	3	2	-	3	3	3	-
CO 4	3	-	-	3	-	-	3	3	-	3	3	3	-	2	3	3	-
CO 5	3	-	-	3	-	-	3	2	-	3	3	3	-	3	3	3	-
CO 6	3	-	-	3	-	-	3	3	-	3	2	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-II)
(Under Credit Based Continuous Evaluation Grading System)

19MSPE207.2*: WOMEN HEALTH AND EXERCISE (ELECTIVE)*

L	T	P	Max Marks: 100
3	0	0	

Section-A

1. Gender difference in muscle morphology
2. Diagnosis and Treatment of Urinary Incontinence and Prolapse

Section-B

1. Anemia
2. Hypertension in Women

Section-C

1. Female athlete triad
2. 1.Introduction & Classification
3. 2.Risk Factors, Anorexia Nervosa, bulima nervosa
4. 3.Identfication – Energy needed, Eating Disorder

Section-D

1. Bone health: assessment and treatment of osteopenia and osteoporosis
2. Evaluation and Treatment of Common Musculoskeletal Complaints

Section-E

1. Exercise for the childbearing year
2. Exercise for adolescence
3. Exercise for the older woman

References:

1. Nadya Swedan (2001): Women's Sports Medicine and Rehabilitation. An Aspen Publication.
2. Mary Lloyd Ireland & Aurelia Nattiv (2002): The Female Athlete. Saunders Publication.
3. Cardozo L and Staskin D (2006): Textbook of Female Urology and Urogynaecology (2nd edn). London: Isis Medical Media Ltd.
4. Mantle J, Haslam J and Barton S (2004): Physiotherapy in Obstetrics and Gynaecology. (2nd Ed.) London: Butterworth–Heinemann.
5. Sapsford R, Markwell S and Bullock–Saxton J (1998): Women's Health: A Textbook for Physiotherapists. London: WB Saunders Company Ltd.
6. Bo, K., Berghmans, L.C.M., Van Kampen, M., Morkved, S. (2007). Evidence–Based Physical Therapy for the Pelvic Floor: Bridging Science and Clinical Practice. London: Churchill Livingstone.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concept of exercise andfemale athlete.

CO2: Understand the influence of different factors on performance.

CO3: Understand the effect of systematic physical activity on different systems of the body

CO4: Understand what is athletic triad and its effects on performance.

CO5: Understand the different Approaches minimize injury and improve performance

CO6: To utilize acquired Knowledge in clinical Decision Making and further Treatment process.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	2	-	3	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 5	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	2	3	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-III)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC301*: SPORTS PHYSIOTHERAPY METHODS*

L	T	P	Max Marks: 100
4	0	0	

Section-A

Massage:

Historical development. Definition and classification of massage techniques, Physiological effects of massage, Description of the techniques of the classical massage. Connective tissue massage, hysiological basis of sports massage and various categories, underwater massage, mechanical devices of massage, therapeutic applications and contraindications of massage.

Section-B

Heat Therapy:

1. Production, Physiological effects, indications, contraindications and specific uses in sports of the following:
2. Infrared rays, Parafine Wax Bath, Steam Bath, Sauna Bath, Moist Heat Pack, Fluidotherapy, Mud Bath and Pelloids.
3. ***Cryotherapy:***
   Physiological effects, Use of cold therapy in acute phase, rehabilitative phase, preventive phase of athletic injury, Methods of application, Indications and contraindications.

Section-C

Hydrotherapy:

History & introduction, Effects of simple baths, raising temperature baths, baths with additives, Aromatic baths, Mineral baths, physical baths, Hydroelectric baths, Stammer baths, whirl pool bath, showers and steam showers.

Functional Bandages & Orthotic Aids:

History and uses of functional bandages, classification according to the time of application, types of bandages, Bandaging techniques and bandaging material, Indications, contraindications athletic shoes and modifications, common orthotic aid and appliances in Sports

Section-D

Electrotherapy:

Principles underlying the application of following modalities with reference to their production, biophysical and therapeutic effects, indications and contraindications and the specific uses in Sports Physiotherapy.

a. Low Frequency Current: Direct Current, Modified Direct Current, Alternative Current, Diadynamic Current, Iontophoresis TENS, High Voltage, Pulsed Galvanic Stimulation.
b. Medium Frequency Current: IFT, Russian Currents.
c. High Frequency Currents:SWD, MWD, Ultrasound, Pulsed Electromagnetic Energy.
d. Radiations: LASER, UVR

2. Recent Advancement in Electrotherapy, Electrodiagnosis and its implications to Sports Physiotherapy.

Section-E

Manual Therapy:

Introduction to manual therapy techniques, joint techniques, manual joint therapy, traction, basic principles of manipulation for various disorders of the spine and extremities. Muscle energy techniques(MET)-definition, elements of MET procedures, clinical utilization of MET.

Practicals:

1. The students will undergo clinical training in the Health Centre on various apparatus of physical medicine. This training will constitute major part of the practical examination.
2. Clinical attachments will also be provided to the students in different sports centres.

References:

1. A.G. Sinha, Principle and Practices of Therapeutic Massage. Jaypee Brothers, New Delhi.
2. William E. Prentice: Therapeutic Modalities in Sports Medicine – Mosby.
3. William E. Prentice: Rehabilitation Techniques – Mosby.
4. O' Sullivan, Schmitz: Physical Rehabilitation – Assessment and Treatment – F.A. Davis.
5. John Low & Reed: Electrotherapy Explained, Butterworth.
6. Meryl Roth Gersh: Electrotherapy in Rehabilitation, FA Davis.
7. Joseph Kahn: Principles and Practice of Electrotherapy, Churchill Livingstone.
8. Claytons Electrotherapy 10th Ed. – Sarah & Bazin – W.B. Saunders.
9. Harrelson and Andrews: Physical Rehabilitation of Injured Athlete.
10. Nelson and Currier: Clinical Electrotherapy, Prentice Hall.
11. Greenman: Principles of Manual medicine, William and Wilkins.
12. Kuprian: Physical Therapy for Sports, W.B. Saunders.
13. Bates: Aquatic Exercise Therapy, W.B. Saunders.
14. Michlovitz – Thermal Agents in Rehabilitation – F.A. Davis.
15. Lehmann – Therapeutic Heat and Cold – Williams & Wilkins.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the types of exercises used for therapy.

CO2: Understand the different types of modalities used in intervention.

CO3: Understand the effect of systematic therapy intervention on different condition.

CO4: Understand about recent advancement and its beneficial effects.

CO5: Understand the sports massage sequence and its application in various sports injuries

CO6: To utilize acquired Knowledge in clinical Decision Making and further Treatment process.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	**-**	**-**	2	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	3	3	**-**	3	2	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	3	3	3	**-**
CO 5	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	2	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-III)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC302*: MEDICAL ASPECTS OF SPORTS MEDICINE*

L	T	P	Max Marks: 100
4	0	0	Mid Term: 20
			Major Exam: 80

Section-A

1. ***Exercise and Common Pulmonary Conditions***
   a. Exercise induced bronchial obstruction
   b. Exercise in chronic airway obstruction
   c. Air pollution and exercise
2. ***Exercise and Cardiac Conditions***
   a. Exercise prescription for heart disease
   b. Exercise in primary prevention in ischemic heart disease
   c. Exercise for secondary prevention of ischemic heart disease

Section-B

1. ***Doping in Sports***
   a. Banned drugs
   b. Procedure of dope testing
   c. Control of doping abuse
2. ***Diabetes and Exercise***
   a. Exercise in diabetic patients
   b. Exercise as a method of control of diabetes

Section-C

Exercises for special categories

a. Child and adolescent athlete's problems
b. Special problems of older athletes
c. Special concerns for differently abled athletes

Section-D

Misc. Conditions

a. Hazards of cold water
b. Exercise for mood enhancement
c. Vitamins and exercise
d. Spinal deformity and sports
e. Time zone shift and sleep deprivation problems
f. Exercise in pregnancy and post partum

References:

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
3. Torg, Welsh & Shephard: Current Therapy in Sports Medicine III – Mosby.
4. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
5. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
6. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
7. Gould: Orthopaedic Sports Physical Therapy, Mosby.
8. C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinmann.
9. D. Kulund: The Injured Athlete, Lippincott.
10. Nicholas Hershman: Vol. I The Upper Extremity in Sports Medicine. Mosby.
11. Lee & Dress: Orthopaedic Sports Medicine – W.B Saunders.
12. K. Park: Preventive and Social Medicine – Banarsi Dass Bhanot – Jabalpur..
13. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
14. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
7. Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the environmental related medical illness for effective Diaganosis.

CO2: Understand the different system illness for narrow down diaganosis.

CO3: Understand the different doping technique for narrow down side effects

CO4: . Understand the different infective disease for gaining insight of contraindication

CO5: Understand the various exercise for better therapy intervention implementation

CO6: Enhance knowledge about Various Medical Condition Sports Rehabilitation and Management.

8. Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	-	-	2	3	-	3	3	-	3	3	3	3	3
CO 2	3	3	-	2	-	-	3	3	-	3	3	3	-	-	3	3	-
CO 3	3	-	-	3	-	-	3	3	-	2	3	3	-	3	3	3	-
CO 4	3	-	-	2	-	-	3	3	-	3	3	3	-	3	3	3	-
CO 5	3	-	-	3	-	-	3	3	-	3	2	3	-	3	2	3	-
CO 6	3	-	-	3	-	-	3	2	-	3	3	3	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-III)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC303*: EXERCISE PHYSIOLOGY &NUTRITION*

L	T	P
4	0	0

Max Marks: 100
Mid Term: 20
Major Exam: 80

Section-A

1. *Nutrition*

a. Carbohydrates, Fats, Proteins.
b. Vitamins, Minerals and Water.
c. Optimal Nutrition for exercise.
d. Nutrition for Physical Performance.
e. Pre–Game meal, Carbohydrate loading.
f. Alcohol, Mega Vitamin Therapy.
g. Food for various athletes of different disciplines.
h. Fluid and energy replacement in prolonged exercise.

Section-B

1. *Energy Transfer for Physical Activity:*

a. Energy transfer in Body.
b. Energy transfer in exercise.
c. Energy expenditure during various activities.
d. Fatigue.
e. Biochemical responses to endurance training.

2. *Cardio Vascular System and Exercise:*

a. Athletes Heart.
b. Cardio Vascular adaptations to sustained aerobic exercises.
c. Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile.
d. Sudden cardiac death in sports. Regulation of circulation during exercise.

Section-C

1. *Exercise and Respiratory System:*

a. Second Wind.
b. Oxygen Debt.
c. Breathe Holding, High Pressure Ventilation. Scuba Diving.
d. Regulation of Respiration during exercise.

2. *Skeletal System:*

a. Growth and Exercise.
b. Repair and adaptation during exercise.
c. Exercise prescription for chronic low back pain
d. Training for Muscular Strength and Endurance.

Section-D

3. ***Gastrointestinal Tract and Endocrine system:***

a. Effect of Sports on GIT and Liver.
b. Hormone regulation of fluid and electrolytes during exercise.
c. Exercise and Menstrual Cycle.
d. Stress Hormones in Exercise.
e. Effects of exercise on various Hormones in the body.
f. Opiods, Runners High.

Practicals:

The student will undergo laboratory and on–field training in exercise physiology.

References:

1. Mc Ardle, Katch, Katch: Exercise Physiology Edition IV.
2. Era Volinski: Nutrition and exercise in Sports – CRC Press, New York.
3. George A. Brooks, Thomas D. Fahey: Exercise Physiology – Human Bioenergetics and its applications 1984, John Wiley & Sons, New York.
4. Astrand & Rodahl: Text Book of Work Physiology, McGraw Hill.
5. Fox and Mathews – The Physiological Basis of Physical Education and athletics – Holt Saunders.
6. Erston and Reilly – Kinanthropometry and Exercise Physiology Laboratory Manual tests, Procedures and Data – F & FN Spon Madras.
7. Rowland – Developmental Exercise Physiology – Human Kinetics.
8. Clarke – Exercise Physiology – Prentice Hall.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the physiology of exercise performance and energy system.

CO2: Understand the different energy system and its influence.

CO3: Understand the Different physical Exercise and its benifits

CO4: Understand the various physiological changes during work load.

CO5: Understand the effect of drugs on performance its abuse

CO6: Enhance and Refresh knowledge about Physiological Changes During Exercise and Nutrient Requirement for a sports Person.

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Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	2	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	2	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 5	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	2	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-III)
(Under Credit Based Continuous Evaluation Grading System)

19MSPC304*: NON–TRAUMATIC MEDICAL CONDITIONS OF ATHLETES*

L	T	P	Max Marks: 100
4	0	0	Mid Term: 20
			Major Exam: 80

Section-A

Illness, Infections, Hypertension, Urine abnormalities; Venereal Diseases; Exercise induced Asthma; Anemia, Delayed Onset Muscle Soreness (DOMS), Runner's high & exercise addiction. G.I.T. Diseases, Exercises and congestive heart failure, exercise for post coronary & bypass patients, exercise for diabetics.
Diagnosis and management of skin conditions of Athletes, Bacterial infections, Fungal infections, Viral infections, boils and cellulitis.

Section-B

Female Specific Problems:

1. Sports Amenorrhoea.
2. Injury to female reproductive tract.
3. Menstrual Synchrony.
4. Sex determination.
5. Exercise and pregnancy.
6. Eating disorders in athletes.

Section-C

1. Common Diseases: Common Cold, Diarrhoea, Dysentery, Typhoid, Cholera, Amoebiasis, Food Poisoning, Tuberculosis, Malaria, Hepatitis etc.
2. AIDS in sports people.

Section-D

Rheumatology & Geriatric Disorder:

1. Rheumatoid arthritis, SLE and Juvenile Rheumatoid Arthritis.
2. Ankylosing Spondylitis.
3. Rheumatology out patient clinic.
4. Osteoarthrosis and other geriatric conditions.

Practicals:

Students will attend the morning and evening O.P.D. in the University health center to acquaint himself/herself of various medical problems.

References:

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Richard B. Birrer: Sports Medicine for the Primary Care Physician, CRC Press.
3. Torg, Welsh & Shephard: Current Therapy in Sports Medicine III – Mosby.
4. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
5. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
6. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
7. Gould: Orthopedic Sports Physical Therapy, Mosby.
8. C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinmann.
9. D. Kulund: The Injured Athlete, Lippincott.
10. Nicholas Hershman: Vol. I, The Upper Extremity in Sports Medicine. Vol. II, The Lower Extremity and Spine in Sports Medicine. Vol. III, The Lower Extremity and Spine in Sports Medicine. Mosby.
11. Lee & Dress: Orthopedic Sports Medicine – W.B Saunders.
12. K. Park: Preventive and Social Medicine – Banarsi Dass Bhanot – Jabalpur.
13. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
14. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
15. Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the non traumatic medical conditionsfor effective Diaganosis.

CO2: Understand the different system illness for narrow down diaganosis.

CO3: Understand the different Gender related illness for narrow down diaganosis

CO4: . Understand the different infective disease for gaining insight of contraindication

CO5: Understand the various arthritic conditions for better therapy intervention implementation

CO6: Enhance knowledge about Various non traumatic Medical Condition Sports Rehabilitation and Management.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	**-**	**-**	3	3	-	3	2	**-**	3	3	3	3	3
CO 2	3	3	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	2	**-**	**-**	3	3	**2**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	3	3	3	**-**
CO 5	3	**-**	-	3	**-**	**-**	3	2	**-**	3	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	**-**	3	2	**-**

MPT (Sports Physiotherapy) (SEMESTER-IV)
(Under Credit Based Continuous Evaluation Grading System)

19 MSPC401*: SPORTS PSYCHOLOGY*

L	**T**	**P**	**Max Marks: 100**
4	**0**	**0**	**Mid Term: 20**
			Major Exam: 80

Section-A

1. ***History and current status of Sports Psychology***.
2. ***Personality Assessment and Sports Personality:***
   a. Theories of personality
   b. Personality assessment
3. ***Attention and Perception in Sports:***
   a. Attention
   b. Perception
4. ***Concentration Training in Sports:***
   a. Basic principles of concentration
   b. Concentration training
   c. Concentration awareness exercises
5. ***Motivational Orientation in Sports***:
   a. Athlete's needs of motivation
   b. Motivational inhibitors
   c. Motivational techniques

Section-B

1. ***Pre–competitive Anxiety:***
   a. Source of PCA
   b. Effect of PCA on performance
2. ***Relaxation Training:***
   a. Definition
   b. Types of relaxation trainings
      i) Progressive muscle relaxation
      ii) Breathing exercises
      iii) Yognidra
      iv) Transcendental meditation
3. ***Aggression in Sports:***
   a. Theories of aggression
   b. Management of aggression
4. ***Role of Psychology in Dealing with Injuries.***
5. ***Eating Disorders:***
   a. Etiology of eating disorders
   b. Types of eating disorders
   c. Complications of eating disorders

6. Goal setting

a. Principles
b. Strategy

Section-C

Doping & Stress Management

1. Psychological aspect of doping
2. Psychological preparation of elite athletes
   a. Concept of psychological preparation
3. Biofeedback training
4. Mental imagery
5. Stress management
   a. Principles of Stress Management
   b. Stress Management techniques

Section-D

1. **Group Behaviour and Leadership:**
   a. Nature of group behaviour and group.
   b. Types of group.
   c. Educational implication of group behaviour.
   d. Meaning of leadership, types of leadership quality of leadership, training and functioning of leadership.
2. **Emotion:**
   a. Meaning of emotion.
   b. Characteristics of emotion.
   c. Meaning of controlling and training of emotions and its importance.
   d. Contribution of sports to emotional health.
   e. Meaning of sentiment, its type, importance and formation.

Practicals:

1. Students will undergo practical training at Sports Psychology Lab at GNDU Campus, Amritsar.
2. Students will also undergo practical training in Sports Psychology at other Sports Institutes all over India.

References:

1. Morgan and King: Introduction to Psychology – Tata McGraw Hill.
2. Suinn: Psychology in Sports: Methods and Applications, Surjeet Publications.
3. Grafiti: Psychology in Contemporary Sports, Prentice Hall.
4. Basmajian: Biofeedback.
5. Sanjiv P. Sahni: Handbook of Sports Psychology – A Comprehensive Manual of Mental Training.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concept of sports psychology..

CO2: Understand the principles of sports psychology.

CO3: Understand the various psychological condition for designing protocol

CO4: Understand about various assessment procedure for optimal Diagnosis.

CO5: Understand the various intervention procedure for optimizing results

CO6: Enhance knowledge about Psychological attitude of sports person for different situation and management of same.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	**-**	**-**	3	2	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	2	3	3	**-**
CO 5	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-IV)
(Under Credit Based Continuous Evaluation Grading System)

19 MSPC402*: APPLIED EXERCISE PHYSIOLOGY*

L	T	P
4	0	0

Max Marks: 100
Mid Term: 20
Major Exam: 80

Section-A

Aging and Exercise

a. Aging and Physiological function.
b. Exercise and Longevity.
c. Coronary Heart Disease and Exercise.
d. Exercise Stress Testing for Diagnosis of CHD.
e. Exercise prescription for healthy aged.
f. Exercise prescription for sedentary adults.
g. Cost and benefits of exercise prescription in Osteoporosis.

Section-B

Temperature Regulation

a. Heat Balance.
b. Methods of Assessing Heat Balance.
c. Effects of Climate.
d. Effects of Exercise on Temperature Regulation.
e. Limit of Tolerance of Heat.
f. Acclimatisation.
g. Avoidance in Heat illness during exercise.
h. Exercises in cold.

Section-C

Physiological Basis and Principles of Training and Conditioning

a. Principles of endurance and strength training
    i. Recovery training intensities in heart rate
    ii. Manipulation of training principles
    iii. Training sub–phases
b. Fundamentals that aid training and performance
    i. Warm up and Cool down
    ii. Flexibility and stretching
    iii. Missing workouts
    iv. Overtraining
c. Analysis of Training

Section-D

1.Misc. Topics

i. High Altitude Training.
j. Sports Diving, Hazards of underwater environment.
k. Special Aids to Athletic Performance:– MORA, Oxygen Inhalation, Sleep.
l. Sex and performance.
m. Assessment of Age.
n. Muscle tissue fibre typing and its significance.

2.Exercise for mood enhancement & anxiety.

Practicals:

Students will undergo laboratory and on field training in exercise physiology.

References:

1. Mc Ardle, Katch, Katch: Exercise Physiology Edition IV.
2. Era Volinski: Nutrition and exercise in Sports – CRC Press, New York.
3. George A. Brooks, Thomas D. Fahey: Exercise Physiology – Human Bioenergetics and its applications 1984, John Wiley & Sons, New York.
4. Astrand & Rodahl: Text Book of Work Physiology, McGraw Hill.
5. Fox and Mathews – The Physiological Basis of Physical Education and Athletics – Holt Saunders.
6. Erston and Reilly – Kinanthropometry and Exercise Physiology Laboratory Manual Tests, Procedures and Data – F &FN Spon Madras.
7. Rowland – Developmental Exercise Physiology – Human Kinetics.
8. Clarke – Exercise Physiology – Prentice Hall.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the physiology of exercise performance and energy system.

CO2: Understand the different energy system and its influence.

CO3: Understand the Different physical Exercise and its benifits

CO4: Understand the various physiological changes during work load.

CO5: Understand the effect of drugs on performance its abuse

CO6: Enhance and Refresh knowledge about Physiological Changes During Exercise and Nutrient Requirement for a sports Person.

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Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	2	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 5	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	3	2	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	2	3	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-IV)
(Under Credit Based Continuous Evaluation Grading System)

19 MSPC403:Life Style Medicine

L	T	P	Max Marks: 100
4	0	0	Mid Term: 20
			Major Exam: 80

Section-A

1. **Introduction to lifestyle medicine**
   a. Definition and importance
   b. contribution of healthy lifestyle to the prevention and treatment of diseases
   c. Definition of health and the foundations for good health
   d. Physiotherapist's health – self -evaluation, personal goals, the importance of being a role model
2. **Importance of Physical activity**
   a. Relationship between physical activity and health
   b. Prescription of physical activity, according to age and gender in different medical conditions.
   c. Evaluating fitness, evaluating and approving physical activity

Section-B

1. **Tools for promoting health change**
   a. The challenge of change
      i. Factors that promote change and factors that impede processes of change
      ii. The emotional aspects of change processes
      iii. Creating a new balance in processes of change
   b. The trans-theoretical model / the theory of the 6 stages of change
   c. Patient compliance
   d. Health coaching
2. **Obesity and related problems**
   a. Dietary recommendation for healthy individual.
   b. Obesity – epidemiology, classification of causes, complications and treatment.
   c. Paediatric obesity- Regulation of food consumption, complications and prevention.

Section-C

1. **Stress Management**
   a. Introduction
      i. The history and definition of "stress"
      ii. The characteristics of stressors
      iii. Clinical implications of stress
      iv. Coping with stress – styles of coping, recruiting resources for coping

b. Self management

c.Tools for stress management

2.Hazards of Smoking

a. The physiological, psychological and behavioral impact of cigarette smoking

b. Evidence based possibilities for treatment

c. Treatment for smoking cessation

Section-D

1.Sleep Medicine

a. Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep

b. Classification of sleep disorders

c. Clinical implications of sleep disturbance

d. Physiotherapeutic measures for sleep deprivation

2.Lifestyle Medicine for Geriatric population

3.Yoga

a. Important Pranayamas and strengthening and rejuvenating asnas.

b. Methods, advantages and contraindications.

References:

1. Pediatric Obesity, IInd edition
2. Illuminating lives with yoga, Geeta Iyer, 2017
3. International text book of Obesity, John Wiley and sons ltd., 2001
4. Neil R. Carlson,. (2013). Physiology of Behavior: 11th Edition, ISBN-13: 9780205239399
5. Morgan and King: Introduction to Psychology - Tata McGraw Hill
6. Life style medicine, IInd edition, James M. Rippe MD, 2013, CRC Press
7. Life style medicine Ist edition 2007 MC Graw-Hill book company Australia

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concept of life style and requirement for healthy life syle.

CO2: Understand the effect of physical activity on healthy life style.

CO3: Understand the concept of promoting different healthy life style.

CO4: Understand different factors influencing life style

CO5: Understand the various adjunctive therapy for betterment of life style

CO6: Enhance knowledge about healthy life style and implement in appropriate way.

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Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	2	-	3	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	3	2	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	3	2	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	3	**-**
CO 5	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-IV)
(Under Credit Based Continuous Evaluation Grading System)

19 MSPP405*:Current Concepts in Sports Medicine*

L	T	P	Max Marks: 100
4	0	0	Mid Term: 20
			Major Exam: 80

Section-A

1. ***Segmental Stabilization Concepts of Spine***
   a. Muscle function in spinal stabilization
   b. Contribution of various muscles to spinal stabilization
   c. Local Muscle dysfunction in Low back pain
   d. Principles of clinical management of deep muscle system for segmental stabilization

Section-B

1. ***Precision heart rate training***
   a. Heart rate monitoring and training
   b. Training in heart zones
   c. Precision heart rate training for specific sports
   d. Multi Activity training
   e. Monitoring of training effects
2. ***Current concepts in obesity management***
   a. Childhood obesity etiology and role of exercise
   b. Obesity correlation with lipidogram
   c. Intra–abdominal obesity hazards
   d. Management of obesity

Section-C

Electromyography and Rehabilitation
   a. Principles of EMG Rehab
   b. Muscular tone, fatigue and neural influences
   c. EMG in the evaluation of Sports Trauma

Section-D

1.Emergency Medical Planning and cover for Sports Events
2. Exercise for growing bones
   Effect of Physical activity intervention in youth
3.Current concepts in comprehensive physical examination for the instabilities of knee.
4.Current concepts in tendinopathies.
5.Current concepts in plasma rich platelet therapy and stem cells in sports.

Seminars and Groups Discussions:
It will be mandatory for the students to conduct seminars on the latest trends in sports medicine & sports physiotherapy.

References:

1. Mallarkey: Managing Obesity, Adis Publications
2. Burke: Precision Heart rate training, Human Kinetics Jull: Segmental Stabilization of Spine3.
3. Mishra: Clinical Neurophysiology, B.I. Churchill Livingstone.

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the current concept in sportsRehabilitaion.

CO2: Understand the exercise effect on different age process for betterment of therapy.

CO3: Understand the concept of advance equipment in Rehabilitation

CO4: Understand. The concept involved in obesity, vital signs monitoring

CO5: Understand the current practice in rehabilitation including coverge of policy

CO6: upgrade the knowledge and Utilizing the service for betterment of Sports Society.

Outcome Mapping

CO/ PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**	**PSO 7**
CO 1	3	3	-	2	**-**	**-**	3	3	-	3	3	**-**	3	3	3	3	3
CO 2	3	3	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	2	**-**	3	3	3	**-**
CO 5	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	2	**-**	3	3	3	**-**
CO 6	3	**-**	-	2	**-**	**-**	3	3	**-**	3	3	2	**-**	**-**	3	3	**-**

MPT (Sports Physiotherapy) (SEMESTER-I)
(Under Credit Based Continuous Evaluation Grading System)

INTER DEPARTMENT ELECTIVE

19MSPE107: Sports Injury & Rehabilitation

L	T	P	Max Marks: 100
4	0	0	Mid Term: 20
			Major Exam: 80

Section-A

BASIC MEDICAL SCIENCE & INJURY

Anatomy - Introduction, **Bones** – Ossification, types ,parts ,region wise. **Muscle –** classification based on structure, types, muscles of upper limb, Lower limb, head & neck, abdomen, back and Thorax **.Joints**, Types , articulation surfaces of various part, Nerve supply, blood supply, movements

Physiology- Introduction, Cardiovascular system, Respiratory system, Muscular System, Nervous system, Endocrine System, physiology of Ageing, Physiological responses to exercise.

Injuries – Introduction, Types of Injuries , Healing process, classification according to Healing Process, Fracture – Classification according to trauma, stages of Healing, Dislocation and Subluxation, Strain , Bruise, Laceration and Scalds.

Section-B

SPORTS REHABILTAION AND TOOLS OF REHABILITATION

Rehabilitation- Introduction,Team members, Role of Team members, steps in rehabilitation, Goal of Rehabilitation , Sports medicine and Sports physiotherapist Contribution in Rehabilitation.

Therapeutic Modalities- Introduction, Superficail and Deep heat Modalities, Cryo therapy , Tecniques of Cryotherapy, Electrical Stimulation, TENS, Ultra sound, Laser, Interferential Therapy.

Therapeutic exercise and tools- Introduction, Passive movement, Active movement , Active assisted, Resisted, Free Exercise,Mobilization, Manipulation, Balance exercise, coordination exercise, plyometrics.

Section-C

SPORTS INJURIES AND REHABILITAION

Sports Injuries – Introduction, Factors contributing Injuries, **Intrinsic factors** – strength, flexibility, balance , endurance, skeletal abnormalities, unhealed Injury, externsic factors, Externsic factors - Enviornment, Sports Wear, Surface, Sports Equipment, Training Techniques. Prevention of injuries.

Section-D

Onfield injuries Evaluation and Management – Introduction , first aid kits. Other preparation , Side Line Classification of Injuries, Evaluation , Prioritization, Decision first aid for life threatening-Airway Breathing Circulation, CPR, first aid for other Non Life threatening.

Section-E

Off field Rehabilitation – Introduction. Contact sports injuries, Non contact sports injuries. Rehabilitation for non Operative conditions, Rehabilitation for Operative conditions. Rehabilitation Protocol For various injuries. Criteria to return.

REFERENCES:

Text Books

1.Kanaga Suntheram R. Sivananda singham P. and Krishnamurti A. 'Text book of Anatomy" - Regional, Functional and Clinical Orient Longman Ltd (1996).

2. Ranganathan. T.S. 'A Text book of Human Anatomy" S. Chand and Company Ltd" Ramnagar, New Delhi. Fifth Editon (1995)

3. Basmajian J.V. 1996 "Muscles Alive" Fourth Edition, Williams and Wilkins: Baltimore'

4. Evans P.G. "Mechanical Properties of Bone" Thomas, Spring Field (1993)

5. Bamett C.H. Davies. D.V. and Mac'Conaill' MA.(1991) "Synovial Joints, Their Structure and Mechanics." Longmans London.

6. Clinical Sports Medicine by Peter Brukner and Karim Khan.

7.The American Orthopaedic Society for Sports Medicine 1988.

CO1: Understand the basic concepts of Anatomy & Physiology

CO2: Understand the principles of Anatomy & Physiology

CO3: Understand the effect of systematic therapy intervention on different condition.

CO4: Understand about recent advancement and its beneficial effects.

CO5: Understand the sports massage sequence and its application in various sports injuries

CO6: To utilize acquired Knowledge in clinical Decision Making and further Treatment proc

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	-	-	2	3	-	3	3	-	3	3	3	3	3
CO 2	3	3	-	2	-	-	3	3	-	3	3	3	-	-	3	3	-
CO 3	3	-	-	3	-	-	2	3	-	3	3	2	-	3	3	3	-
CO 4	3	-	-	3	-	-	3	2	-	3	2	3	-	3	3	3	-
CO 5	3	-	-	3	-	-	3	2	-	3	3	3	-	3	3	3	-
CO 6	3	-	-	3	-	-	3	3	-	3	3	2	-	-	3	3	-

MPT (Sports Physiotherapy) (SEMESTER-IV)
(Under Credit Based Continuous Evaluation Grading System)

19MSPE407: Exercise and Elderly Population

Section A
AGE SPECFIC CHANGES AND DEMANDS

1. Physical Changes ,Physiological Changes,
2. Risk factors
3. Psychological and Nutrients

Section B
AGE SPECFIC EVALUATION

1. Musculoskeletal screening
2. Cardiovascular and Respiratory Evaluation
3. Movement Analysis

Section C
EXERCISE

1. Active Life Style and Sedentary Individuals
2. Safety consideration During Exercise for Different Age
3. Exercise Prescription

Section D
EXERCISE PRESCRIPTION
Exercise Prescription for Heart Disease
Exercise for COPD
Exercise for Air pollution

Section E
Exercise for Diabetic patients
Special problem for older athletes
Exercise and older athletes

REFERENCES

1 Neurological Rehabilitation: Umphred, Darcy, A.
2. Essential of Medical pharmacology by Tripathi
3. Text book of Medical Pharmacology by PadmajaUdaykumar Exercise Physiology – Energy, Nutrition and Human Performance William D. McArdle
4. Exercise Physiology - Theory and application to fitness and performance Scott K. Powers
5. Human movements explained. Kim Jorus& Karen Barker
6. Exercise prescription – Shankar
7. Orthopaedic physical assessment – David J. Mager
8. Physical Rehabilitation by – Susan-O-Survan
9. Hamilton Bailey's – Physical signs – Demonstration of Physical signs

Course Outcomes

At the end of the course, the student will be able to

CO1: Understand the basic concept of physical and physiological changes in body.

CO2: Understand the different factors influencing
.

CO3: Understand the effect of systematic physical activity on different systems of the body

CO4: Understand different diagnosis tool for establish accuracy

CO5: Understand the various Exercise protocol for different cardio respiratory conditions

CO6: Enhance knowledge about Various problems and proper management of age related ailments
.

Outcome Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	3	-	3	**-**	**-**	3	3	-	3	2	**-**	3	3	3	3	3
CO 2	3	2	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	3	3	**-**
CO 3	3	**-**	-	3	**-**	**-**	2	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 4	3	**-**	-	3	**-**	**-**	3	3	**-**	2	3	3	**-**	3	3	2	**-**
CO 5	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	3	3	3	**-**
CO 6	3	**-**	-	3	**-**	**-**	3	3	**-**	3	3	3	**-**	**-**	3	3	**-**