

**CHOICE BASED CREDIT SYSTEM
(CBCS)**

COURSE SCHEME & SYLLABUS

**For
Under Graduate Programme**

Bachelor of Arts (B.A.)

with

**PHYSICAL EDUCATION
(Annual System)**

{Effective from Academic Session 2018–19 Onwards}



**DEPARTMENT OF PHYSICAL EDUCATION
HIMACHAL PRADESH UNIVERSITY
SUMMER HILL, SHIMLA**

171 005

Choice Based Credit System
B.A. with Physical Education (Annual System)

Year	Core Course (12)	Ability Enhancement Compulsory Course (AECC) (2)	Skill Enhancement Course (SEC) (4)	Discipline Specific Elective (DSE) (4)	Generic Elective (GE) (2)
I	English-1	Environmental Science	Nil	Nil	Nil
	Sanskrit/Hindi-1				
	Introduction to Physical Education (PED101TH)				
	Olympic Movement and Organisation of Tournaments (PED102TH)	English/Hindi/Sanskrit (Any one)			
	DSC-2A				
	DSC-2B				
II	English-2	Nil	Sports Medicine, Physiotherapy and Rehabilitation (PED203TH)	Nil	Nil
	Sanskrit/ Hindi-2				
	Human Anatomy and Physiology (PED201TH)				
	Sports Psychology (PED202TH)		Sports Training (PED204TH)		
	DSC-2C				
	DSC-2D				
III	Nil	Nil	Specialization in Volleyball (PED301PR) Or Specialization in Football (PED302PR) Or Specialization in Kabaddi (PED303PR)	Recreation (PED305TH) Or Kinesiology and Biomechanics (PED306TH)	Health Education and Nutrition (PED309TH)
			Specialization in Athletics (PED304PR)	Methods of Teaching in Physical Education (PED307TH) Or Officiating and Coaching (PED308TH)	Yoga (PED310TH)
				DSE-1B	
				DSE-2B	

Note: Practical Paper will not have tutorials.

Year-wise Outline of the Courses

Year	Course Opted	Course Name	Course Code	Credits	Distribution of Marks		
					ETE	CCA	ETP
I	Compulsory Core Course-1	English-1		6	-	-	-
	Compulsory Core Course-2	Sanskrit/Hindi-1		6	-	-	-
	Discipline Specific Course-1A (DSC-1A)	Introduction to Physical Education	PED101TH	4	50	30	-
	Discipline Specific Course-1A (Practical) {DSC-1A(PR)}	Athletics and Game-1	PED101PR	2	-	-	20
	Discipline Specific Course-1B (DSC-1B)	Olympic Movement and Organisation of Tournaments	PED102TH	4	50	30	-
	Discipline Specific Course –1B (Practical) {DSC-1B(PR)}	Athletics and Game-2	PED102PR	2	-	-	20
	Discipline Specific Course-2A (DSC-2A)			6	-	-	-
	Discipline Specific Course-2B (DSC-2B)			6	-	-	-
	Ability Enhancement Compulsory Course-1 (AECC-1)	Environmental Science		4	-	-	-
	Ability Enhancement Compulsory Course-2 (AECC-2)	English/Hindi/ Sanskrit (Any One)		4	-	-	-
Total Credits (1st Year)				44			

Year-wise Outline of the Courses

Year	Course Opted	Course Name	Course Code	Credits	Distribution of Marks		
					ETE	CCA	ETP
II	Compulsory Core Course-3	English-2		6	-	-	-
	Compulsory Core Course-4	Sanskrit/Hindi-2		6	-	-	-
	Discipline Specific Course-1C (DSC-1C)	Human Anatomy and Physiology	PED201TH	4	50	30	-
	Discipline Specific Course-1C (Practical) {DSC-1C(PR)}	Athletics and Game-3	PED201PR	2	-	-	20
	Discipline Specific Course-1D (DSC-1D)	Sports Psychology	PED202TH	4	50	30	-
	Discipline Specific Course -1D (Practical) {DSC-1D(PR)}	Athletics and Game-4	PED202PR	2	-	-	20
	Discipline Specific Course-2C (DSC-2C)			6	-	-	-
	Discipline Specific Course-2D (DSC-2D)			6	-	-	-
	Skill Enhancement Course-1 (SEC-1)	Sports Medicine, Physiotherapy and Rehabilitation	PED203TH	4	70	30	-
	Skill Enhancement Course-2 (SEC-2)	Sports Training	PED204TH	4	70	30	-
Total Credits (2nd Year)				44			

Year-wise Outline of the Courses

Year	Course Opted	Course Name	Course Code	Credits	Distribution of Marks			
					ETE	CCA	ETP	
III	Skill Enhancement Course-3 (Practical) {SEC-3(PR)}	a) Specialization in Volleyball b) Specialization in Football c) Specialization in Kabaddi	} Any One	PED301PR PED302PR PED303PR	4	-	30	70
	Skill Enhancement Course-4 (Practical) {SEC- 4(PR)}	Specialization in Athletics		PED304PR	4	-	30	70
	Discipline Specific Elective-1A (DSE-1A)	Recreation Or Kinesiology and Biomechanics	} Any One	PED305TH PED306TH	6	70	30	-
	Discipline Specific Elective-1B (DSE-1B)	Methods of Teaching in Physical Education Or Officiating and Coaching	} Any One	PED307TH PED308TH	6	70	30	-
	Discipline Specific Elective-2A (DSE-2A)				6	-	-	-
	Discipline Specific Elective-2B (DSE-2B)				6	-	-	-
	Generic Elective-1 (GE-1)	Health Education and Nutrition		PED309TH	6	70	30	-
	Generic Elective-2 (GE-2)	Yoga		PED310TH	6	70	30	-
Total Credits (3rd Year)				44				
Total Course Credits (44+44+44)				132				

B.A. with Physical Education

Discipline Specific Course (4 Papers along with Practicals)

Year I

1. Introduction to Physical Education
2. Athletics and Game-1 (Discipline Specific Course-Practical)
3. Olympic Movement and Organisation of Tournaments
4. Athletics and Game-2 (Discipline Specific Course-Practical)

Year II

1. Human Anatomy and Physiology
2. Athletics and Game-3 (Discipline Specific Course-Practical)
3. Sports Psychology
4. Athletics and Game-4 (Discipline Specific Course-Practical)

Skill Enhancement Course (4 Papers)

Year II

1. Sports Medicine, Physiotherapy and Rehabilitation
2. Sports Training

Year III

1. Specialisation in Volleyball (Practical)
2. Specialisation in Football (Practical)
3. Specialisation in Kabaddi (Practical)
4. Specialisation in Athletics (Practical)

Discipline Specific Elective Course (2 Papers)

Year III

1. Recreation
2. Kinesiology and Biomechanics
3. Methods of Teaching in Physical Education
4. Officiating and Coaching

Generic Elective Course (2 Papers)

Year III

1. Health Education and Nutrition
2. Yoga

Course Evaluation

1. Theory Examination

Theory examination evaluation system shall have the following two components:

- A. **Continuous Comprehensive Assessment (CCA)** accounting for 30% of the final grade that a student gets in a course; and
- B. **End-Term Examination (ETE)** accounting for the remaining 70% of the final grade that the student gets in a course (except in case of 50 marks theory paper where 20 marks of practical will be added in the grand total of 70 marks).

- A. **Continuous Comprehensive Assessment (CCA)**: This would have the following components:

Continuous Comprehensive Assessment (CCA) Pattern: Maximum Marks Allotted: 30

Class Test {After Completion of 40% of Syllabus} (Marks)	House Test* {After Completion of 75% of Syllabus} (Marks)	Seminars/ Assignments/ Tutorials/ General Behaviour of Students (Marks)	Attendance (Marks)	Total Marks	Minimum Pass Marks
05	10	10	5	30	11

* The pattern of examination for conducting the House Test shall be same as prescribed for the end term examination.

- A. **End-Term Examination (ETE)**: The remaining 70% of the final grade of the student in a course will be on the basis of an end-term examination (ETE) that shall be of three hours duration and will be covering the whole syllabus of the course. The question paper format and marks distribution scheme for 70 marks theory paper and 50 marks theory paper will be as specified below:

i) End Term Examination Format (for 70 Marks Theory Paper):

End Term Examination Scheme:

Maximum Marks Allotted	Minimum Pass Marks	Time Allotted
70	25	3 Hours

Paper Setting Format:

Section	No. of Questions	Syllabus Coverage	Nature of Questions	Questions to be Attempted	Maximum Marks
A	10	Whole	MCQ/True-False/Fill in the blanks or such type	10 (1 mark each)	10
	5	Whole	Short answer type (25-50 words)	5 (4 marks each)	20
B	2	Unit I	Long answer type	1 (10 marks each)	10
C	2	Unit II	Long answer type	1 (10 marks each)	10
D	2	Unit III	Long answer type	1 (10 marks each)	10
E	2	Unit IV	Long answer type	1 (10 marks each)	10
Total (A+B+C+D+E)					70

ii) End Term Examination Format (for 50 Marks Theory Paper):

End Term Examination Scheme:

Maximum Marks Allotted	Minimum Pass Marks	Time Allotted
50	18	3 Hours

Paper Setting Format:

Section	No. of Questions	Syllabus Coverage	Nature of Questions	Questions to be Attempted	Maximum Marks
A	10	Whole	MCQ/True-False/Fill in the blanks or such type	10 (1 mark each)	10
B	2	Unit I	Long answer type	1 (10 marks each)	10
C	2	Unit II	Long answer type	1 (10 marks each)	10
D	2	Unit III	Long answer type	1 (10 marks each)	10
E	2	Unit IV	Long answer type	1 (10 marks each)	10
Total (A+B+C+D+E)					50

2. Practical Examination

Practical examination evaluation system will also have the CCA and ETP components at par with the theory examination as follows (except in case of 20 marks ETP examination, where there will be no CCA):

- A. Continuous Comprehensive Assessment (CCA)** accounting for 30% of the final grade that a student gets in a practical course and its evaluation pattern would be same as mentioned above for the theory examination.
- B. End-Term Practical (ETP) Examination** accounting for the remaining 70% of the final grade that a student gets in a practical course and will be based on an end term practical (ETP) examination that shall be of three hours duration and will be covering the whole syllabus of the course. Its evaluation would be based upon the components: written lab work, markings of playfields/athletic track, demonstration of the skills, viva-voce and practical record. The marks distribution scheme for 20 marks end term practical examination and 70 marks end term practical examination will be as specified below:

i) End Term Practical Examination Scheme (for 20 Marks Practical):

Marks Allocation Scheme for End Term Practical Examination:

Practical Examination Components	Maximum Marks	Minimum Pass Marks	Time Allotted
Playfield/Track Markings	05	08	3 Hours
Demonstration of Skills	05		
Practical Record	05		
Viva-Voce	05		
Total	20		

ii) End Term Practical Examination Scheme (for 70 Marks Practical):

Marks Allocation Scheme for End Term Practical Examination:

Practical Examination Components	Maximum Marks	Minimum Pass Marks	Time Allotted
Written Lab Work	20	28	3 Hours
Demonstration of Skills	20		
Playfield/Track Markings	10		
Practical Record	10		
Viva-Voce	10		
Total	70		

Note:-

1. A student will have to pass all the components i.e. CCA, ETE and/or ETP separately to become eligible to be declared successful in a course.
2. The minimum passing marks will be 40% in aggregate. However, 35% each in Internal Assessment (CCA) and Final Theory Examinations will be compulsory.
3. For Final Practical Examinations 40% passing marks will be compulsory and if a candidate fails to obtain 40% marks in the Final Practical Examinations, he/she will be treated as fail in that subject.
4. A Candidate failing in either one or two subjects/papers will be given compartment in those subjects/papers and will be eligible for promotion to the next Class.
5. He/She will appear in the subject/paper in which he/she got the compartment.
6. He/She will have two chances (one at the supplementary stage and one at the annual stage), available to him to clear his/her compartment in subjects/papers.
7. He/She will not be awarded the degree until he/she clears all his/her courses within five years from the date of his/her admission to a particular Course.
8. A candidate failing in three or more subjects/papers will be treated as fail in that year and has to repeat the entire year.

COURSE CONTENTS IN DETAIL

Year-I

THEORY COURSE

COURSE CODE: PED101TH

(DSC-1A)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=50+CCA=30) =80

INTRODUCTION TO PHYSICAL EDUCATION

Unit-I Introduction

1. Meaning, Definition, Need and Scope of Physical Education.
2. Aim and Objectives of Physical Education.
3. Importance of Physical Education in present era.
4. Misconceptions about Physical Education.
5. Relationship of Physical Education with General Education.
6. Physical Education as an Art and Science.

Unit-II

1. Historical Development of Physical Education in India {Pre-Independence-(Ancient India, Medieval and British Period)}.
2. Physical Education in India (Post-Independence).
3. Contribution of Akhadas, Vyayamshalas and Y.M.C.A.
4. Modern Perspectives: National Awards/State Awards and Honours, Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, M.A.K.A. Trophy and Parshu Ram Award.
5. Eminent Sports Personalities of different games.

Unit-III Biological Basis of Physical Education

1. Growth and Development, Differences between growth and development, Factors affecting growth and development.
2. Anatomical and Physiological Differences between Male and Female.
3. Effects of Heredity and Environment on Growth and Development.

Unit-IV Emerging Trends in Physical Education

1. Career Opportunities/Avenues in Physical Education and Sports:
 - a. As a Physical Education teacher.

- b. Coach / trainee.
 - c. Gym instructor.
 - d. Physiotherapist.
 - e. Psychologist.
 - f. Dietitian.
 - g. Sports administrator/manager
 - h. Rehabilitator
- 2. Adventurous Sports
 - 3. Water Sports
 - 4. Fast growing professions and emerging trends in physical education and sports.

References:

- 1. Barrow, Harold M., "Man and Movement: Principles of Physical Education", Lea and Febiger, Philadelphia, 1983.
- 2. Bucher, Charles A. & Wuest, Deborah A., "Foundations of Physical Education and Sports", 11th Edition, The CV Mosby Co., St. Louis, 1991.
- 3. Krishna Murthy V. & Paramesara Ram, N., "Educational Dimensions of Physical Education", 2nd Revised edition, Print India, New Delhi, 1990.

Year-I

PRACTICAL COURSE

COURSE CODE: PED101PR

{DSC-1A (Practical)}

Credits: 2

{L=8+T=0+P=44(22*)} =30

Marks: 20

ATHLETICS AND GAME-I

1. Athletics

i) Event (Shot put and Long jump):

- (a) Introduction of event and brief history.
- (b) Basic skills and techniques.
- (c) IAAF rules and regulations.
- (d) Equipment required for the event.
- (e) No. of officials required and duties of officials.
- (f) Techniques of the event.
- (g) Teaching stages of the event.
- (h) Preparation and filling of score sheet.
- (i) Marking of the shot put/long jump field.

2. Game

ii) Badminton/Weightlifting: (Any one)

- (a) History of the game.
- (b) Measurement and preparation of the playfield.
- (c) Equipment required for the game.
- (d) Fundamental skills and lead-up games.
- (e) Techniques, strategies and system of play.
- (f) Rules and regulations of the game.
- (g) National and International tournaments associated with the game.
- (h) Team/Individual records (World, Olympic, Asian and National Level) of the game.
- (i) Awards associated with the game.
- (j) Knowledge of score sheets.
- (k) Signals of officiating.

Year-I

THEORY COURSE

COURSE CODE: PED102TH

(DSC-1B)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=50+CCA=30) =80

OLYMPIC MOVEMENT AND ORGANIZATION OF TOURNAMENTS

Unit-I Olympics Games, Asian Games and Commonwealth Games

1. Olympic Movement: Ancient and Modern Olympics Games.
2. Importance of Olympic Games, Objectives of Olympic, Olympic Motto, Emblem, Flag, Olympic Torch and Awards, Opening and Closing Ceremonies.
3. Asian Games: Historical background of Asian Games.
4. Performance of India at Olympic Games, World Championship, Asian Games, SAF and Commonwealth Games.

Unit-II Promotion of Physical Education and Sports in India

1. Promotion of Physical Education and Sports: Policies, Schemes.
2. Role of IOA, SAI, NSNIS and Khelo Bharat Abhiyan in the development of Physical Education and Sports in India.
3. Causes of deterioration of Sports Performance.
4. Indian National Sports Policy and Sports Policy of Himachal Pradesh.

Unit-III Intramurals and Extramurals

1. Intramurals :
 - i) Its importance and planning.
 - ii) Events of competitions, time and facility factor.
2. Extramurals :
 - ii) Planning and conduct.
 - iii) Outcomes of participations (Educational).
 - iv) Limitations in participations.
 - v) Selection and training of teams.
 - vi) Participation, finance and other aspects.

Unit-IV Organisation of Tournaments

1. Concept and definition of tournament.

2. Types of Tournaments: Knock-Out and League Tournament, Process of Draw of Fixture, Merits and Demerits of various kinds of Tournaments.
3. Protocols to organise College Annual Athletic Meet.

References:

1. Carto, J.E.L. And Calif, S.D. [ed], "Medicine & Sport Science: Physical Structure of Olympic Athletes", London: Karger, 1984.
2. Cliw, Gifford, "Summer Olympic", 2004.
3. Daw, Anderson, "The Story of the Olympics", 2008.
4. Maranirs, David, "Rome 1960: The Olympics that Changed the World", 2008.
5. Osborne, Manpope, "Ancient Greece and the Olympic", 2004.
6. Perrottet, Tony, "The Naked Olympics: The True Story of the Ancient Games", 2004.
7. Singh, M.K., "Indian Women and Sports", Rawat Publication, 1991.

Year-I

PRACTICAL COURSE

COURSE CODE: PED102PR

{DSC-1B (Practical)}

Credits: 2

{L=8+T=0+P=44(22*)} =30

Marks: 20

ATHLETICS AND GAME-II

1. Athletics

i) Event (Sprints):

- (a) Introduction of event and brief history.
- (b) Basic skills and techniques.
- (c) IAAF rules and regulations.
- (d) Equipment required for the event.
- (e) No. of officials required and duties of officials.
- (f) Techniques of the event.
- (g) Teaching stages of the event.
- (h) Preparation and filling of score sheet.
- (i) Marking of the track.

2. Game

ii) Basketball/Table Tennis: (Any one)

- (a) History of the game.
- (b) Measurement and preparation of the playfield.
- (c) Equipment required for the game.
- (d) Fundamental skills and lead-up games.
- (e) Techniques, strategies and system of play.
- (f) Rules and regulations of the game.
- (g) National and International tournaments associated with the game.
- (h) Team/Individual records (World, Olympic, Asian and National Level) of the game.
- (i) Awards associated with the game.
- (j) Knowledge of score sheets.
- (k) Signals of officiating.

Year-II

THEORY COURSE

COURSE CODE: PED201TH

(DSC-1C)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=50+CCA=30) =80

HUMAN ANATOMY AND PHYSIOLOGY

Unit-I

1. Basic concept of Anatomy and Physiology.
2. **Muscular System:** Types of muscles, Structure and functions of muscles, Types of muscular contraction-Isotonic, isometric and isokinetic contractions and Effects of exercises and training on muscular System.
3. **Skeletal System:** Introduction, Functions and Importance of Skeletal System, Types of Bones-Skull, Upper and Lower Limbs and Trunk and Effects of exercises and training on Skeletal System.

Unit-II

1. **Respiratory System:** Introduction, Structure and Function, Types of respiration, Organs of respiration, Mechanism of Respiration, Respiratory Capacities and Volumes, Measurement of Respiratory Capacities and Volumes and Effects of exercises and training on Respiratory System.
2. **Circulatory System:** Structure of the Heart, Chambers of Heart, Arteries, Veins and Capillaries, Systematic and Pulmonary Circulation, Functions of Heart, Cardiac Output, Heart Rate, Stroke Volume, Blood Volume, Blood Flow, Athlete's Heart and Effects of exercises and training on Circulatory System.

Unit-III

1. **Digestive System:** Introduction, Importance of digestion, Functions and process of digestion, Organs of Digestive system, Mechanism of Digestive system, Effects of exercises and training on Digestive System.
2. **Nervous System:** Structure and Function of Brain and Spinal Cord, Autonomous Nervous System, Peripheral Nervous System, Nerve Cell, Receptor, Motor Unit and Reflex Action and Effects of exercises and training on Nervous System.

Unit-IV

1. Meaning and definition of Physiology and Exercise Physiology.

2. Need and importance of exercise physiology in the field of Physical Education.
3. Energy sources:
 - a. Definition of energy
 - b. Metabolism
 - c. Creatine phosphate (CP)
 - d. Adenocine triphosphate (ATP)
 - e. Fatigue
4. Fatigue and factors responsible for fatigue.

References:

1. Jain, A. K. (2002). Anatomy & Physiology for Nurses, Arya Publishers, Delhi.
2. Moried, E. N., (2007). Essential of Human Anatomy & Physiology (ed.), 8th Dorling Kindersley, India.
3. Prives, M. et al. (2004). Human Anatomy, Vol. I & II, Paragon, Delhi.
4. Seeley, et al. (2008). Anatomy & Physiology, McGraw Hill, Boston.
5. Tortora (2003). Principles of Anatomy & Physiology, New York: John Willy & Sons.
6. William, C. S. (2000). Essentials of Human Anatomy & Physiology, Benjamin.

Year-II

PRACTICAL COURSE

COURSE CODE: PED201PR

{DSC-1C (Practical)}

Credits: 2

{L=8+T=0+P=44(22*)} =30

Marks: 20

ATHLETICS AND GAME-III

1. Athletics

i) Event (High jump and Javelin):

- (a) Introduction of event and brief history.
- (b) Basic skills and techniques.
- (c) IAAF rules and regulations.
- (d) Equipment required for the event.
- (e) No. of officials required and duties of officials.
- (f) Techniques of the event.
- (g) Teaching stages of the event.
- (h) Preparation and filling of score sheet.
- (i) Marking of the shot high jump/javelin field.

2. Game

ii) Handball/Boxing: (Any one)

- (a) History of the game.
- (b) Measurement and preparation of the playfield/arena.
- (c) Equipment required for the game.
- (d) Fundamental skills and lead-up games.
- (e) Techniques, strategies and system of play.
- (f) Rules and regulations of the game.
- (g) National and International tournaments associated with the game.
- (h) Team/Individual records (World, Olympic, Asian and National Level) of the game.
- (i) Awards associated with the game.
- (j) Knowledge of score sheets.
- (k) Signals of officiating.

Year-II

THEORY COURSE

COURSE CODE: PED203TH

(SEC-1)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=70+CCA=30) =100

SPORTS MEDICINE, PHYSIOTHERAPY AND REHABILITATION

Unit-I Sports Medicine

1. Sports Medicine: Meaning, definition, aims, objectives, modern concepts and importance.
2. Injuries: Type of sports injuries, prevention of injuries in sports, common sports injuries and their diagnosis.
3. First Aid: Meaning, objectives and precautionary measures while giving first aid and PRICE.
4. Treatment of Laceration, Blisters, Contusion, Strain, Sprain, Fracture, Dislocation and Cramps.

Unit-II Common Accidents and Ergogenic Aids

1. Emergency treatment for common accidents: Drowning, Burning, Insect stings & bitings, Snake bite, Dog bite, Poisoning, Unconsciousness, Fainting, Hysteria, Sunstroke, Shock, Electric shock and Acid burn.
2. Doping: Meaning and Definition.
 - a. NADA (An Introduction).
 - b. WADA (An Introduction).
 - c. Aims and Objectives of NADA and WADA.
3. Ergogenic aids in sports and their ill effects :
 - a. Anabolic agents
 - b. Stimulants
 - c. Beta blockers
 - d. Narcotic analgesics
 - e. Diuretics
 - f. Blood doping

Unit-III Physiotherapy

1. Physiotherapy: Definition, guiding principles of physiotherapy and importance of physiotherapy.

2. Massage: History of massage, types of massage and physiological effect of massage.

Unit-IV Hydrotherapy and Thermotherapy

1. Hydrotherapy: Introduction and demonstration of treatments of Cryotherapy, Contrast Bath, Whirlpool Bath , Steam Bath , Sauna Bath and Hot Water Fomentation.
2. Thermotherapy: Introduction and demonstration of treatment of thermotherapy.

References:

1. Jain, A. K. (2002). Anatomy & Physiology for Nurses, Arya Publishers, Delhi.
2. Moried, E. N. (2007). Essential of Human Anatomy & Physiology (ed.), 8th Dorling Kindersley, India.
3. Prives, M. et al. (2004). Human Anatomy, Vol. I & II, Paragon, Delhi.
4. Seeley et al. (2008). Anatomy & Physiology, McGraw Hill, Boston.
5. Tortora (2003). Principles of Anatomy & Physiology, New York: John Willy & Sons.
6. William, C. S. (2000). Essentials of Human Anatomy & Physiology, Benjamin.
7. Wilson and Waugh (1996). Anatomy & Physiology in Health & Illness, Churchill Livingstone.

Year-II

THEORY COURSE

COURSE CODE: PED202TH

(DSC-1D)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=50+CCA=30) =80

SPORTS PSYCHOLOGY

Unit-I Introduction

1. Meaning of psychology and sports psychology.
2. Definition, scope and importance of sports psychology.
3. Goals of sports psychology.
4. Psychological factors affecting sports performance.

Unit-II Growth and Development

1. Concept of growth and development.
2. Physical, mental, social, intellectual and emotional development in infancy, later childhood and adolescence stages.
3. Learning: meaning, definition and nature of learning.
4. Laws of learning and learning curve.
5. Theories of learning.

Unit-III Motivation

1. Meaning and definition of motivation.
2. Types of motivation and motivation in learning.
3. Individual differences its type and nature.
4. Determinants of individual difference:
 - a. Heredity (Nature).
 - b. Environment (Nurture).
5. Intelligence, its meaning and types.

Unit-IV Personality

1. Personality: Meaning of personality, definition and personality characteristics.
2. Factors affecting personality and dimensions of personality.
3. Classification of personality traits.
4. Emotion, anxiety and stress management in sports.
5. Role of sports in the development of personality.

References:

1. Cohen, R. J. and Swerdlik, M. E. (2002). Psychological testing and Assessment: An Introduction to Tests and Measurement, McGraw Hill, New York: U.S.A.
2. Cox, R. H. (2002). Sport Psychology, McGraw Hill, London.
3. Dixit, S. (2006). Khel-Manovigyan, Sports Publications. Delhi.
4. Mortin, G. L. (2003). Sports Psychology, Sports Science Press, USA.
5. Sahni, S. P. (2005). Psychology and Its Application in Sports, D.V.S. Delhi.
6. Verma, V. (1999). Sport Psychology & All Round Development, Sport Publications: New Delhi.
7. Wann, D. L. (1997). Sport Psychology, Prentice Hall: New Jersey.

Year-II

PRACTICAL COURSE

COURSE CODE: PED202PR

{DSC-1D (Practical)}

Credits: 2

{L=8+T=0+P=44(22*)} =30

Marks: 20

ATHLETICS AND GAME-IV

1. Athletics

i) Event (Discus throw and Triple jump):

- (a) Introduction of event and brief history.
- (b) Basic skills and techniques.
- (c) IAAF rules and regulations.
- (d) Equipment required for the event.
- (e) No. of officials required and duties of officials.
- (f) Techniques of the event.
- (g) Teaching stages of the event.
- (h) Preparation and filling of score sheet.
- (i) Marking of the discus throw/triple jump field.

2. Game

ii) Hockey/Judo: (Any one)

- (a) History of the game.
- (b) Measurement and preparation of the playfield/arena.
- (c) Equipment required for the game.
- (d) Fundamental skills and lead-up games.
- (e) Techniques, strategies and system of play.
- (f) Rules and regulations of the game.
- (g) National and International tournaments associated with the game.
- (h) Team/Individual records (World, Olympic, Asian and National Level) of the game.
- (i) Awards associated with the game.
- (j) Knowledge of score sheets.
- (k) Signals of officiating.

Year-II

THEORY COURSE

COURSE CODE: PED204TH

(SEC-2)

Credits: 4

(L=44+T=16+P=0) =60

Marks: (ETE=70+CCA=30) =100

SPORTS TRAINING

Unit-I

1. Sports Training: Introduction, Meaning and Definition of Sports Training.
2. Aim and Objectives of Sports Training.
3. Principles of Sports Training, System of Sports Training.
4. Basic Performance, Good Performance and High Performance Training.

Unit-II

1. Concept of warming-up and cooling down.
2. Physiological basis of warming-up and cooling down.
3. Training Components: Speed, Strength, Endurance, Flexibility and Co-ordinative Abilities.
4. Types and methods for the development of training components.

Unit-III

1. Training Process: Training Load, Definition and Types of Training Load.
2. Principles of Intensity and Volume.
3. Technical Training: Meaning and Methods of Technical Training.
4. Tactical Training: Meaning and Methods of Tactical Training.

Unit-IV

1. Training Programming and Planning: Periodization, Meaning and types of Periodization.
2. Aim and Content of Periods-Preparatory, Competition and Transitional.
3. Planning a training session.
4. Talent Identification and Development.

References:

1. Baechle, T. R, & Earle, R. W. (2000). Essentials of Strength Training and Conditioning. Human Kinetics, USA.
2. Bompa, T. O. (1994). Theory and Methods of Training-A Key to Athletic Performance (3rd Ed.), Kandwall, Hunt Publication Co.

3. Bompa. T.O. and G. Gregory Hett (2009). Periodization: Theory and Methodology of Training.
4. Dick, F. W. (1999). Sport Training Principles, A and C Black. London.
5. Singh, Hardayal (1991). Science of Sport Training, D.V.S Publication, Delhi.
6. Singh, M. K. (2008). Comprehensive Badminton (Scientific Training), Friends Publication: New Delhi.

Year-III

PRACTICAL COURSE

COURSE CODE: PED301PR

{SEC-3 (Practical)}

Credits: 4

{L=15+T=0+P=90(45*)} =60

Marks: (ETP=70+CCA=30) =100

SPECIALIZATION IN VOLLEYBALL

Unit-I

1. History of game, measurement and preparation of the play field and equipment required for game.
2. Fundamental skills and lead-up games.
3. Techniques, strategies and method of play.
4. Rules and regulations of the game.
5. National and International tournaments associated with the game.
6. Team/Individual records (World, Olympic, Asian and National Level) of the game.
7. Awards associated with the game.
8. Duties of the officials.
9. Technical Equipment for officiating.
10. Knowledge of the score sheets.
11. Signals of officiating.

Unit-II

1. General and specific warming-up and cooling down.
2. Long-term and short-term preparation for the decisive volleyball competitions.
3. Psychological qualities and preparation of a volleyball player.
4. Offensive, defense system in play, service and reception pattern.
5. Individual, group and team tactics.
6. Diet and nutrition for a volleyball player.
7. Coordination among the manager, coach, doctor, psychologist and players.

Unit-III

1. Teaching of volleyball skills.
2. Preparing a lesson plan.
3. Specific training methods for different playing positions.

4. Counseling during competitions.
5. Information and publicity of the competition, writing press release and reports.
6. Facility management, quality control of equipment and player's kit, risk management, medical check-up, medical aid and insurance.
7. Personnel management and interpersonal communication skills.

Unit-IV

1. Injuries associated with the game: Ankle sprain, finger injuries, shoulder dislocation, knee displacement.
2. Preventive and safety measures, P.R.I.C.E., Rehabilitation and physiotherapy.
3. Training means for development of different components of physical fitness i.e. Speed, Strength, Endurance, Flexibility, Coordinative ability.

References

1. American Volleyball Coaches Association (2005). Volleyball: Skills & Drills. Human Kinetics, Champaign, U.S.A.
2. FIVB (1996). Backcourt Spiking in Modern Volleyball. FIVB, Chennai.
3. Sagar, S. K. (1994). Cosco Skills Statics-Volleyball. Sports Publication, Delhi.
4. Scates, A. E. (1993). Winning Volleyball.

Year-III

PRACTICAL COURSE

COURSE CODE: PED302PR

{SEC-3 (Practical)}

Credits: 4

{L=15+T=0+P=90(45*)} =60

Marks: (ETP=70+CCA=30) =100

SPECIALIZATION IN FOOTBALL

Unit-I

1. History of game, measurement and preparation of the play field and equipment required for game.
2. Fundamental skills and lead-up games.
3. Techniques, strategies and method of play.
4. Rules and regulations of the game.
5. National and International tournaments associated with the game.
6. Team/Individual records (World, Olympic, Asian and National Level) of the game.
7. Awards associated with the game.
8. Duties of the officials.
9. Technical Equipment for officiating.
10. Knowledge of the score sheets.
11. Signals of officiating.

Unit-II

1. General and specific warming-up and cooling down.
2. Long-term and short-term preparation for the decisive football competitions.
3. Psychological qualities and preparation of a football player.
4. Offensive, defense system in play, service and reception pattern.
5. Individual, group and team tactics.
6. Diet and nutrition for a football player.
7. Coordination among the manager, coach, doctor, psychologist and players.

Unit-III

1. Teaching of football skills.
2. Preparing a lesson plan.
3. Specific training methods for different playing positions.

4. Counseling during competitions.
5. Information and publicity of the competition, writing press release and reports.
6. Facility management, quality control of equipment and player's kit, risk management, medical check-up, medical aid and insurance.
7. Personnel management and interpersonal communication skills.

Unit-IV

1. Injuries associated with the game: Ankle sprain, finger injuries, shoulder dislocation, knee displacement.
2. Preventive and safety measures, P.R.I.C.E., Rehabilitation and physiotherapy.
3. Training means for development of different components of physical fitness i.e. Speed, Strength, Endurance, Flexibility, Coordinative ability.

References

1. Kumar, N. (2003). Play and Learn Football. K.S.K., New Delhi.
2. Reilly. T. (1988). Science and Football. E.N. Sports Ltd., London.
3. Sharma, O. P. (2001). Teaching and Coaching-Football. Khel Sahitya Kendra, Delhi.
4. Shellito, K. (1988). Personal Best Football. William Collins & Sons, London.
5. Thani, Y. (2002). Coaching Successfully Football. Khel Sahitya Kendra, Delhi.
6. Williams, J. (1988). The Roots of Football.

Year-III

PRACTICAL COURSE

COURSE CODE: PED303PR

{SEC-3 (Practical)}

Credits: 4

{L=15+T=0+P=90(45*)} =60

Marks: (ETP=70+CCA=30) =100

SPECIALIZATION IN KABADDI

Unit-I

1. History of game, measurement and preparation of the play field and equipment required for game.
2. Fundamental skills and lead-up games.
3. Techniques, strategies and method of play.
4. Rules and regulations of the game.
5. National and International tournaments associated with the game.
6. Team/Individual records (World, Olympic, Asian and National Level) of the game.
7. Awards associated with the game.
8. Duties of the officials.
9. Technical Equipment for officiating.
10. Knowledge of the score sheets.
11. Signals of officiating.

Unit-II

1. General and specific warming-up and cooling down.
2. Long-term and short-term preparation for the decisive kabaddi competitions.
3. Psychological qualities and preparation of a kabaddi player.
4. Offensive, defense system in play, service and reception pattern.
5. Individual, group and team tactics.
6. Diet and nutrition for a kabaddi player.
7. Coordination among the manager, coach, doctor, psychologist and players.

Unit-III

1. Teaching of kabaddi skills.
2. Preparing a lesson plan.
3. Specific training methods for different playing positions.

4. Counseling during competitions.
5. Information and publicity of the competition, writing press release and reports.
6. Facility management, quality control of equipment and player's kit, risk management, medical check-up, medical aid and insurance.
7. Personnel management and interpersonal communication skills.

Unit-IV

1. Injuries associated with the game: Ankle sprain, finger injuries, shoulder dislocation, knee displacement.
2. Preventive and safety measures, P.R.I.C.E., Rehabilitation and physiotherapy.
3. Training means for development of different components of physical fitness i.e. Speed, Strength, Endurance, Flexibility, Coordinative ability.

References

1. Mishra, S.C. (2007). Teach Yourself Kabaddi. Sports Publications, New Delhi.
2. Rao, C.V. (1983). Kabaddi: Native Indian Sports. NSNIS, Patiala.
3. Rao, E. P. (1994). Modern Coaching in Kabaddi. D.V.S. Publications.
4. Syal, M. (2004). Kabaddi Teaching. Prerna Parkashan, New Delhi.

Year-III
THEORY COURSE

COURSE CODE: PED305TH

(DSE-1A)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

RECREATION

Unit-I

1. Meaning of Recreation, aims and objectives of Recreation.
2. Physical education and recreation.
3. Need and importance of recreation in modern age.
4. Arrangement of recreation centres.

Unit-II

1. Concept and meaning of camp, aims and objectives of camp.
2. Types of camp.
3. Agencies promoting camp.
4. Educative value of camp.

Unit-III

1. Types and nature of recreation.
2. Recreation providing agencies and recent changes in the recreational activities.
3. Responsibilities of a recreational manager.

Unit-IV

1. Meaning, importance and utilities of picnic.
2. Organization of picnic and essentials for picnic and factors affecting its organization.
3. Educative value of picnic.
4. Recreational and Adventurous Avenues in Himachal Pradesh (Water Games, Paragliding, Winter Games, Mountaineering and Trekking).

References:

1. Organisation and Administration & Recreation in Physical Education, Tandon Publication: Ludhiana.
2. Administration of Physical Education and Athletics Program. Charles, A. Bucher.
3. Butter, George. Introduction to Community Recreation, McGraw Hill Book Company Inc, New York. 3rd edition, 1959.

**Year-III
THEORY COURSE**

COURSE CODE: PED306TH

(DSE-1A)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

KINESIOLOGY AND BIOMECHANICS

Unit-I

1. Meaning and importance of Kinesiology.
2. Meaning and importance of Biomechanics.
3. Joints, their types and movements around joints and Goniometry.

Unit-II

1. Fundamental anatomical position, planes and axis.
2. Kinesiological classification of muscles.
3. Role of different muscles: Agonist, Antagonist, Mover, Stabilizer, Fixator and Neutralizer.

Unit-III

1. Description of biomechanical terms: Distance, Displacement, Speed, Velocity, Acceleration, Angular Velocity, Angular Acceleration, Linear and Angular Motion, Kinetics and Kinematics, Force, Pressure, Gravity, Friction, Work, Power, Torque and Parabolic Path.

Unit-IV

1. Newton's Laws of Motion and their implication in sports.
2. Mechanical Levers and their Implication in sports and physical education.
3. Meaning and concept of Equilibrium and Centre of Gravity.

References:

1. Jensen et. al., "Applied Kinesiology and Biomechanics" 3rd Edition, McGraw Hill Book Company, 1984.
2. Piscopo et.al., "Kinesiology: Science of Movement", John Wiley & Sons, Inc., New York, 1981.
3. Wells, et.al, "Kinesiology: Scientific Basis of Human Motion", 3rd Edition, Saunders College, Philadelphia, 1976.
4. Rasch et. al., "Kinesiology and Applied Anatomy: The Science of Human Movement", 6th Edition, Lea & Febiger Philadelphia, 1978.

Year-III
THEORY COURSE

COURSE CODE: PED309TH

(GE-1)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

HEALTH EDUCATION AND NUTRITION

Unit-I Introduction

1. Concept of health, meaning, definition and scope of health education.
2. Objective of health education.
3. Principles of health education.
4. Need and significance of health education.

Unit-II Personal Health and Hygiene

1. Meaning of personal hygiene.
2. Personal care of:
 - a. Skin.
 - b. Hair.
 - c. Ear.
 - d. Eyes.
 - e. Nose.
 - f. Teeth.
 - g. Feet.
 - h. Cloths.
3. Eliminating of body wastes.
4. Rest, sleep and relaxation.
5. Effect of alcohol and smoking on health.

Unit-III School Health Programme and Nutrition

1. *Healthful School Living:*
 - a. Place and location of school.
 - b. Buildings.
 - c. Infrastructure and facilities.
 - d. Safety measures.

2. Health Supervision/Services:

- a. Physical medical examination and their follow up.
- b. Health inspection of students.
- c. Rehabilitation Centers of communicable diseases.

3. Health Instructions Related To:

- a. Personal care.
- b. Communicable disease.
- c. Nutrition.
- d. Healthful living.

4. Nutrition:

- a. Balanced diet and its elements:
 - i. Carbohydrates, Proteins, Fats, Vitamins, Minerals, Salts and Water.
- b. Daily energy/calorie requirements of healthy person.

Unit-IV Communicable Diseases

1. Meaning and definition of communicable disease.
2. Mode of transmission, prevention and cure and sanitation of communicable disease.
3. Common Communicable Diseases:
 - a. Influenza.
 - b. Malaria.
 - c. Small pox.
 - d. Tuberculosis.
 - e. Typhoid.
 - f. Cholera.
 - g. Measles.

References:

1. Klander H. F., "School Health Education", The Mac Millan Co. 1962.
2. Pande P.K. and Gango Padhyay S.R., "Health Education for School Children."
3. S. Dheer and Others, "Introduction to Health Education, AP Publishers, 9 Books Market Chowk Adda, Tanda, Jalandhar, 1989.
4. Nebmir. A., "The School Health Education", New York: Harper and Brothers.
5. Park, JE and Park, K., "Text Books of Preventive and Social Medicine" 10th Edition, Banarsi Dass Bhanot, Jabalpur, 1985.

Year-III
PRACTICAL COURSE

COURSE CODE: PED304PR

{SEC-4 (Practical)}

Credits: 4

{L=15+T=0+P=90(45*)} =60

Marks: (ETP=70+CCA=30) =100

SPECIALIZATION IN ATHLETICS

Unit-I

1. Introduction to athletics.
2. Historical developmental of athletics, Ancient Olympics and Modern Olympics games.
3. Historical review of track and field with special reference to India.
4. National and International level athletics championships: Olympic Games, Asian games, IAAF-World Championship, Commonwealth Games, National Games, Open National, Youth National and Inter-Universities athletics championships.

Unit-II

1. Athletic track and its types.
2. Procedure and methods to mark the track (200m, 400m).
3. Marking and construction of Shot Put, Discus Throw, Javelin throw and Hammer throw arena.
4. Specification and construction of Long Jump, Triple Jump high jump and pole vault pit/runways etc.
5. Selected National and International personalities in athletics.
6. Need, importance and procedure of Warming-up and Cooling down.
7. First aid and rehabilitation of athletics injuries.

Unit-III

1. **Track Events:** Brief background, technique, training and important motor components of the following track events:
 - i) Sprints races: 100m, 200m, 400m; Hurdle Races: High Hurdle and Low Hurdle and Steeple Chase.
 - ii) Middle and Long Distance Races; Combined Events: Decathlon and Heptathlon; Relay Races and Marathon.

2. **Fields Events:** Brief background, technique, training and important motor components of the following field events:
 - i) Shot put, Discus throw, Javelin throw and Hammer Throw.
 - ii) Long Jump, Triple Jump, High Jump and Pole vault.

Unit-IV

1. Technical training and practice of following events:
 - i) Sprints Starting techniques, finishing techniques.
 - ii) Shot put, Discus throw and Javelin throw (Basic Teaching Stages)
 - iii) Long Jump, Triple Jump High Jump and Pole vault(Basic Teaching Stages)
 - iv) Record files, calculations of straight, radius and staggers of standard tracks.
 - v) Relays: Holding of the baton and various types of baton exchange (visual and non-visual).

References

1. Ken O. Bosen. Track & Field for Beginners. Metropolitan Books, New Delhi.
2. Kumar, Pardeep. (2008). Historical Development of Track and Field. Friends Publication, New Delhi
3. Malhotra, A. K. (1980). A Guide to be an Athlete. Krishna Publications, New Delhi.
4. Mohan, V. M. Athletics for Beginners. Metropolitan Book, Delhi.
- Quercetani, R. (2000). Athletics: A History of Modern Track & Field. Sep Editrice Publishers, Milano, Italy.

Year-III
THEORY COURSE

COURSE CODE: PED307TH

(DSE-1B)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

METHODS OF TEACHING IN PHYSICAL EDUCATION

Unit-I

1. Meaning and importance of methods of teaching in Physical Education.
2. Principles of teaching methods and different methods of teaching.
3. Factors affecting teaching methods.
4. Lesson Planning: Lesson plan, objectives and types of lesson plan.
5. Principles of lesson plan and values of lesson plan.
6. Class activity/Recreational part (Assembly, Revision, Reassembly and Dismissal).

Unit-II

1. Teaching aids, meaning, its importance in physical education, types of teaching aids and use and improvisation of apparatus.
2. Presentation technique, criterion of presentation technique and qualities of good presenter.
3. Factors influencing presentation technique.

Unit-III

1. Teaching Skills:
 - i) Lecture method.
 - ii) Command method.
 - iii) Discussion method.
 - iv) Project method.
 - v) Demonstration method.
 - vi) Imitation method.

Unit-IV

1. Class formation, its values and types of class formation.
2. Supervision and inspection of teaching methods.

3. Methods of supervision and qualities of a supervisor.
4. Evaluation of teaching methods.
5. Need and importance of evaluation.

References:

1. Kamlesh, M. L. and Sangral M.S., Methods in Physical Education, Parkash Brothers, 5-6 Book Market Ludhiana, 1986.
2. Bucher, C.A., Administration of Physical Education and Athletics Programme, St. Louis: The C.V. Mosby Co., 1979.
3. Organization and Management of Physical education and Sports, Rex Book Store, USA.
4. Chelladurai, P., Sport Management: Macro Perspectives. London, ON: Sports Dynamics, 1985.

Year-III
THEORY COURSE

COURSE CODE: PED308TH

(DSE-1B)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

OFFICIATING AND COACHING

Unit-I

1. Introduction of officiating and coaching and its importance in games and sports.
2. Principles of officiating and coaching.
3. Outlook of officials and coaches towards management, players and spectators.
4. Measures for improving the standards of officiating and coaching.

Unit-II

1. Philosophy of coaching.
2. Coach as a Mentor, duties of a coach in general- Pre, during and post-game situations and responsibilities of a coach on and off the field.
3. Psychological aspects during competition and coaching.

Unit-III

1. Philosophy of officiating.
2. Duties of official in general, pre, during and post-game situations.
3. Technical and Tactical preparation of an official.
4. Ethics of officiating.

Unit-IV

1. Qualities and qualification of an efficient coach and official.
2. Current status of coaching and officiating in India.
3. Measures for improving the standard of coaching and officiating in India.
4. Role of impartial officiating and coaching in maintaining integrity and values of sports.
5. Technical Officials levels and Exams of various Games (An Introduction).

References:

1. Bunn, J. W. (1968). The Art of Officiating Sports, Prentice Hall: Englewood Cliffs, N. J., USA.
2. Bunn, J. W. (1972). Scientific Principles of Coaching, Prentice Hall: Englewood Cliffs, N. J., USA.

3. Dyson, G. H. (1963). *The Mechanics of Athletics*, University of London Press Ltd.: London.
4. Lawther, J.D. (1965). *Psychology of Coaching*, Prentice Hall: New York.
5. Singer, R. N. (1972). *Coaching Athletics & Psychology*, New York: McGraw Hill Book Company.
6. Ken O' Bosen(1993). *Teaching Athletics – Skill & Techniques*, NSNIS Publications, Patiala.

Year-III
THEORY COURSE

COURSE CODE: PED310TH

(GE-2)

Credits: 6

(L=65+T=25+P=0) =90

Marks: (ETE=70+CCA=30) =100

YOGA

Unit-I

1. Meaning and concept of Yoga.
2. Aim, objectives and Importance of Yoga.
3. Types of Yoga.
4. Importance of yoga in the modern world.

Unit-II

1. Asanas and their importance.
2. Classification of asanas:
 - a. Meditative
 - b. Relaxative
 - c. Cultural
3. General techniques and benefits of the following:
Padmasana, Vajrasana, Halasana, Bhujangasana, Sarvangasana, Chakrasana, Dhanurasana, Salabhasana, Paschimotanasana, Mayurasana and Shirshasana.
4. Technique and benefits of Surya Namaskar.
5. Difference between yoga and general exercises.

Unit-III

1. Pranayama: meaning, objectives and types of pranayama.
2. Physiological values of pranayama.
3. Surya namaskar, its methodology and importance.
4. Yoga for the cure of Disease and Postural Deformities.

Unit-IV

2. Sudhi Kiryas: Introduction, objectives and types of sudhi kriyas.
3. Physiological values of sudhi kriyas and Importance of sudhi kriyas.
4. Mudras and Bandhs, types and importance of mudras and bandhs.

5. General principles of yoga.

References

1. Iyenger, B. K. S., “Light on Yoga”(ed.), George Allen & Unwin, Great Britain 1982.
2. Sharma, P. D., “Yoga, Yogasana and Pranayama for Health”, Navneet Publication (I) Limited, Ahemdabad,1984.
3. Anand, O. P., “Yoga Dwara Kaya Kalp”, Swasth Sahitya Parkashan, Kanpur, 2001.
4. Datey, K. K. et al., “Yoga and Your Heart”, Jaico Publishing House, Bombay, 2nd Edition, 1987.
5. Dev, Swami Ram, “Yog Sadhna Yog Chikitsa Rahasya”, Patanjali-Divya Prakashan, Haridwar, 2006.