বাংলাদেশ ক্রীড়া শিক্ষা প্রতিষ্ঠান

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বাংলাদেশ ক্রীড়া শিক্ষা প্রতিষ্ঠান

ক্রীড়ায় শ্রেষ্ঠত্ব

Excellence in Sports

Post Graduate Diploma in Science of Sports Training-2023

SPECIALIZATION AREA

SCIENCE OF SPORTS TRAINING (GTMT)
Syllabus
Paper I

UNIT-I

1. Sports Training
   - 1.1 Definitions of conditioning sports training and coaching
   - 1.1 Relationship of sports training with other sports science disciplines
   - 1.2 Functions of sports training
   - 1.3 Model of sports training process
   - 1.5 Aim, tasks and characteristics of sports training
   - 1.6 Principles of sports training
   - 1.7 Systematization of sports training process

2. Training Load
   - 2.1 Definition of training load
   - 2.2 Important features of training load
   - 2.3 Principles of training load
   - 2.4 Adaptation process and conditions of adaptation
   - 2.5 Judgment of training loads
   - 2.6 Target training zone and load recovery ratio
   - 2.7 Phases of recovery
   - 2.8 Factors affecting the pace of recovery
   - 2.9 Means of recovery
   - 2.10 Overload, its causes and symptoms. Tackling of over load.

UNIT-II

Training for Motor Components

1. Strength
   - 1.1 Definition and forms of strength
   - 1.2 Factors determining strength
   - 1.3 Principles of strength training
   - 1.4 Types of muscle contractions
   - 1.5 Methods and means of strength training
   - 1.6 Strength training for children and women
   - 1.7 Strength training in the yearly cycle
   - 1.8 Preventive measures in strength training

2 Endurance
   - 2.1 Definition and forms of endurance (according to nature and duration of activity)
   - 2.2 Importance of endurance
   - 2.3 Factors determining endurance
   - 2.2 Methods and means of endurance training
   - 2.3 Nutrition and endurance performance
   - 2.4 Altitude training for endurance

3 Speed
   - 3.1 Definition and forms of speed
   - 3.2 Factors determining speed
   - 3.3 Methods and means of speed training
   - 3.4 Speed barrier and how to tackle it.

4 Flexibility
- 4.1 Definition and forms of flexibility
- 4.2 Importance of flexibility
- 4.3 Factors determining flexibility
- 4.4 Methods and means of flexibility training
- 4.5 Additional remarks about flexibility training

5 Coordinative Abilities
- 5.1 Definition of coordinative abilities
- 5.2 Characteristics of coordinative abilities
- 5.3 Importance of coordinative abilities
- 5.4 Different coordinative abilities affecting performance in games and sports
- 5.5 Training for coordinative abilities.

UNIT-III

1 Technique Training
- 1.1 Definition of skill, style, technique and technical training
- 1.2 Aim of technique in sports
- 1.3 Characteristics of technique
- 1.4 Motor learning and factors affecting it
- 1.5 Phases of skill acquisition
- 1.6 Re-learning
- 1.7 Methods of technique training
- 1.8 Causes and correction of faults.

SPECIALIZATION AREA

SCIENCE OF SPORTS TRAINING (GTMT)
Syllabus
Paper II

UNIT-III

1 Tactical Training
- 1.1 Definition of tactics and strategy
- 1.2 Aim of tactics
- 1.3 Basic tactical concepts-Offensive. Defensive and High Performance Tactics
- 1.4 Methods of tactical training
- 1.5 Tactical action and its phases

UNIT-IV

1 Planning and Organization of training
- 1.1 Definition and important of planning
- 1.2 Principles of planning
- 1.3 Systems of planning
- 1.1 Performance and load indices
- 1.2 Formulation of an yearly plan
- 1.3 Training session and its structure
- 1.4 Training for ball games, combat sports, racket sports and individual sports
- 1.5 Class organization
- 1.6 Principles of teaching

2 Periodisation
- 2.1 Definition of periodisation
- 2.2 Types of periodisation
- 2.3 Content of training for different periods

3 Competition Planning and Preparation
- 3.1 Meaning and importance of competition
- 3.2 Frequency of competition
- 3.3 Forms of competition
- 3.4 Competition in basic and advanced training stages
- 3.5 Direct preparation for an important competition.

UNIT V

1 Motor Development
- 1.1 Aspects of motor development
- 1.2 Stages of motor development and training implications

2 Talent identification
- 2.1 Definition of sports talent
- 2.2 Principles of talent identification and development
- 2.3 Steps for talent identification

3 Education and Sports Training
- 3.1 Aspects and elements of personality
- 3.2 Methods education

4 Evaluation of Training
- 4.1 Items to be included in evaluation programme
- 4.2 Uses of graphs and principles of graphical representation
- 4.3 Forms of diagrams used for evaluation and checking progress
- 4.4 Rules governing performance checks and motor test

SPECIALIZATION AREA

SCIENCE OF SPORTS TRAINING (GTMT)

Practical Syllabus

1. A study to identify different features of training load (Intensity, Density, Duration and Frequency) from training schedules for improving various components of performance.
2. A study to work out target training zones for improving different components of performance.
3. A study to work out load recovery ratio.
4. A study to Compute 1 RM for untrained and trained persons.
5. A study to prepare out a catalogue of strength training exercises for different muscles.
6. A study of training means for strength (Isotonic & Isometric Exercises with or without equipment)
7. A study of training means for speed (Acceleration runs, Ins and outs and Differential races).
8. A study of training means for endurance (Continuous running, Interval running and Fartlek).
9. A study of training means for flexibility (Active and Passive Exercises and PNF Method).
10. A study of training means for coordinative abilities.

Reference Books:

Dick W. Frank. Sports Training Principles (London: Lepus Books)

Harre, Dietrich. Principles of Sports Training (Berlin: Sportverlag)

Matveyew L. P. Fundamentals of Sports Training (Moscow: Progress Publishers)

Paish Wilfred. The Complete Manual of Sports Science, A and C Black London, 1998

Singh H. Sports Training: General Theory and Methods (Patiala: NSNIS)

Tandon D. K, Uppal A. K., Alegaonkar P. M. and Singh Kanwaljeet. Scientific Basis of Physical Education and Sports. Friends Publication (India), Delhi. 2001.

Uppal A. K. Scientific Principles of Sports Training. Friends Publication (India), Delhi, 2001.

SUBSIDIARY AREA

MEASUREMENT AND EVALUATION
Syllabus
Paper I

UNIT-I

1 Introduction:
- 1.1 Meaning of Evaluation
- 1.2 Importance of Evaluation
- 1.3 Principles of Evaluation

2 Selection and constructions of tests
- 2.1 Criteria of test selection-Scientific Authenticity (Reliability, Objectivity, Validity and Norms)
- 2.2 Classification of tests-Standardized and Teacher made tests (Objective and Subjective tests)
- 2.3 Construction of tests-Knowledge tests (written tests) and Skill tests.

UNIT-II

1. Measurement of Organic Functions. Motor Fitness and General Motor Ability
- 1.1 Organic Function Tests
  - 1.1.1 Coopers 12 min Run/Walk Test
  - 1.1.2 Tuttle Pulse Ratio Test
  - 1.1.3 Harvard Step Test and its modifications
  - 1.1.4 Hymen's Cardio-pulmonary Index (CPI)
- 1.2 Motor Fitness Tests
  - 1.2.1 Oregon Motor Fitness Test
  - 1.2.2 J.C.R Test
  - 1.2.3 AAHPER Youth Fitness Test
  - 1.2.4 Canadian Fitness Test (CAHPER)
  - 1.2.5 Indian Motor fitness Test
- 1.3 General Motor Ability Tests
  - 1.3.1 Mc Cloys General Motor Ability Test
  - 1.3.2 Methany Johnson Test

UNIT-III

1 Tests for Strength
- 1.1 Rogers Physical Fitness Index
- 1.2 Kraus Weber Strength Test

SUBSIDIARY AREA

MEASUREMENT AND EVALUATION
Syllabus
Paper-II

1 Skill Test
- 1.1 Procedure of skill test construction
- 1.2 Method of establishing reliability, objectivity and validity of a skill test
- 1.3 Preparation of norms

UNIT-IV

1 Anthropometric Measurements
- 1.1 Height Measurement
- 1.2 Width Measurement
- 1.3 Length Measurement
- 1.4 Girth Measurement

2 Somatotypes
Sheldon's technique (Ectomorph. Mesomorph and Endomorph)

3 Posture tests
- 3.1 IOWA Posture Test
- 3.2 Kelley's Foot Test
- 3.3 Tests for detecting Kyphosis, Scoliosis and Lordosis.

UNIT-V

1 Introduction
- 1.1 Meaning and definition of statistics
- 1.2 Importance of statistics
- 1.3 Meaning of data and types of data
- 1.4 Frequency Table-Meaning and construction

2 Fundamentals of Statistics
- 2.1 Measures of Central Tendency-Meaning, Uses and Calculation
- 2.2 Measures of Variability-Meaning, Uses and Calculation.
- 2.3 Percentiles and their Calculation
- 2.4 Correlation - Meaning, Uses and Calculation.

Reference Books:

Barrow M. Harold and Mc Ghee Rosemary A. Practical Approach to Measurement in Physical Education (Philadelphia: Lea and Febiger)

Clarke H. David and Clarke Harrison H. Application of Measurement to Physical Education (Englewood Cliffs: Prentice Hall. Inc)

Larson L. A. and Yocom R. C. Measurement and Evaluation in Physical. Health and Recreation Education (St. Louis: C. V. Mosby Co)

Mathew, Donald K. Measurement in Physical Education (London: W. B. Saunders Co.)

SUBSIDIARY AREA

ALLIED AREA
Exercise Physiology
Paper I

1 Energy Sources
- 1.1 Definition of energy and Biological Energy Cycle
- 1.2 Adenosine Tri Phosphate, Sources of ATP
- 1.3 Aerobic and Anaerobic System during Rest and Exercise, Recovery from Exercise
- 1.4 Terminology, Recovery Oxygen, Rest and Slow components
- 1.5 Replenishment of Energy system during recovery
- 1.6 Reduction of Lactic acid in blood and Muscle.

2. Cardiopulmonary Considerations: Pulmonary Ventilation and Ventilation Mechanism

3. Gas Exchange and Transport: Transport of Oxygen by blood.

4. Cardiovascular System

- 4.1 Heart and Cardiac Cycle
- 4.2 Cardiac output during rest and exercise
- 4.3 Circulatory Mechanism

5. Hemodynamics

- 5.1 Blood Pressure
- 5.2 Resistance to flow
- 5.3 Changes in Pressure
- 5.4 Resistance during exercise

6. Skeletal Muscles

- 1.1 Structure and function of skeletal muscles
- 1.2 Contraction of muscle fibres-Sliding Filament Theory
- 1.3 ST and FT muscle fibers
- 1.4 Distribution of muscle fibers in different games.

Reference Books

Guyton, Arthur C. Text Book of Medical Physiology. (Philadelphia: W. B. Saunders Company)

Morehouse L. E. and Miller A. T. Physiology of Exercise. (Saint Louis: The C. V. Mosby Company).

Karpovich, P. V. and Sinning. Wayne E. Physiology of Muscular Activity (Philadelphia. W. B. Saunders Company).

Bourne, Geoffery H. The Structure and Function of Muscles (London: Academic Press).

Astrand P. O. and Rodahl Karre Text Book of Work Physiology. (Tokyo: Mc Graw Hill Kogakusha, Ltd).

Mathew, D. K. and Fox E. L. Physiological Basis of Physical Education and Athletics (Philadelphia: W. B. Saunders Company).

SUBSIDIARY AREA

ALLIED AREA
Sports Biomechanics
Paper I

1. Definition and importance of Sports Bio-mechanics and Relationship with other sports science disciplines.
2. Definition of kinesiology and its importance. Planes and Axes and fundamental movements around the joints.
3. Fundamentals of Mechanics
   (i) Motion-concept; types –linear, angular, general.
   (ii) Linear Kinematics-Distance, Displacement, Speed, Velocity, Acceleration; Relations among kinematic parameters.
   (iii) Angular Kinematics-Angular Distance, Angular Displacement, Angular Speed, Angular Velocity, Relations among angular kinematic parameters.
   (iv) Linear Kinetics-Newton`s laws of motion and their application in games and sports; concept of Inertia, Force, Momentum, Impulse, Action and Reaction.
   (v) Angular Kinetics-Newton`s laws of motion as applicable to angular motion; concept of Moment of Inertia, Moment of Force, Couple.
4. Force: Definition; Force as a vector; composition and resolution of two or more co-planner forces; Effects of application of force on a body.
5. External forces (Selected) which influence sports performance: Body Weight; Centripetal and Centrifugal forces, Ground Resistance.
6. Work; Power; Energy: Concepts and relevance to sports
7. Machine components of human body: Lever; Wheel & Axle; Pulley.
8. Equilibrium: Concept, Types, Conditions, Factors affecting equilibrium.
9. Bio-mechanical analysis of sports skills-basic concept.

Sports Bio-mechanics
Practical Syllabus

1. Location of muscles of human body using drawings and figures
2. Identification of muscles involved in fundamental movements at shoulder joint
3. Identification of muscles involved in fundamental movements at elbow joint
4. Identification of muscles involved in fundamental movements at hip joint
5. Identification of muscles involved in fundamental movements at knee joint
6. Measurement of average linear velocity
7. Measurement of instantaneous linear velocity
8. Measurement of linear acceleration
9. Measurement of range of motion by Goniometer
10. Measurement of work and power
11. Measurement of sports movements by video camera
12. Measurement of leg and back strength by Dynamometer

List of Books

1. Mechanics of Athletics-Dyson
2. Scientific Principles of Coaching-Bunn, J. W.
3. Mechanical Kinesiology- Berham, J.
4. Biomechanics of Sports Techniques-Hay, J. G.
5. Kinesiology-Luttens, K and Hamilton, N.
6. Analysis of Human Motion-Scott, M. G.
7. Biomechanics of Athletic Movement-Hochmuth, G.
8. Biomechanics of Sports-Miller, D. I. and Nelson, R. C
9. Techniques for the Analysis of Human Movement-Grieve, Miller, Mitchelson, Paul and Smith.
10. Mathematics in Sport-Townend, M. S.
11. Qualitative Analysis of Human Movement-Knudson, D. V. and Morrison, C. S.
12. Biomechanics of Sports and Exercise-McGinnis, P. M.
13. Kinematics of Human Motion-Zatsiorsky
14. Biomechanics-Motion, Flow, Stress and Growth-Fung

SUBSIDIARY AREA

ALLIED AREA

Sport Psychology

Paper II

1. Introduction to Sport Psychology

(i) Definition of Sport Psychology
(ii) Relationship of sport psychology to other sport sciences
(iii) Importance of teaching sport psychology for coaches and physical educationist

2. Personality and Sports Performance

(i) Definition and types of personality
(ii) Personality traits of sportspersons
(iii) Sports participation and personality relationship

3. Attention in Sport

(i) Defining attention and focus of attention
(ii) Types of attentional focus to sport performance
(iii) Arousal-attention relationship in sports

4. Cognition in Sport

(i) Definition of cognition and cognitive dissonance
(ii) Characteristics of cognitive processes in sport
(iii) Decision making in sport

5. Motor Learning

(i) Motor learning and factors affecting motor learning
(ii) Selected theories of motor learning

6. Motivation in Sport

(i) Meaning and types of motivation (extrinsic, intrinsic and achievement motivation)
(ii) Techniques of enhancement of motivation

7. Emotion and Sports Performance

(i) Anxiety-meaning and types
(ii) Effect of anxiety on sports performance-with special reference to theories of anxiety-performance relationship
(iii) Aggression-meaning and types
(iv) Aggression and sports relationship

8. Psychological Preparation for Competitive Sports Performance

(i) Psycho-regulative techniques for relaxation and activation/arousal
(ii) Short-term psychological preparation for competition.
(iii) Long term psychological preparation for competition with psychological skill training

Sport Psychology
Practical Syllabus

1. Knowledge about psychological assessments
   (i) Subjective self-report assessments versus objective type of assessments
   (ii) Psycho-physiological assessments
2. Knowledge about psychotherapeutic techniques
   (i) Cognitive therapy
   (ii) Behaviour modification technique
   (iii) Relaxation training
   (iv) Biofeedback

Reference Books

Alderman, R. B. Psychological Behavior in Sports (Philadelphia; London, Saunders Company).

Cratty, Bryant. J. Movement Behaviour and Motor Learning (Philadelphia: Lea and Febiger)

Kamlesh M. L. Psychology of Physical Education Sports (New Delhi: Metropolitan Book Co, Pvt. Ltd).

Martens Rainer, Social Psychology and Physical Activity (New York: Harper and Row Publishers).

Martens, Reiner, Coaching Guide to Sports Psychology (Illinois: Human Kinetics Publisher Inc).

Williams, Jean M. Applied Sport Psychology. Personal Growth to Peak Performance. Mayfield Publishing Company.

Davis Martha; Eshelman Elizabeth Robbins & Mc Kay Matthews, The Relaxation & Stress Reduction Workbook. Jaico Publishing House.

Woolfolk, R. L. & Leherer, P. M. Principles & Practice of Stress Management. Guilford Press.

SUBSIDIARY AREA

ALLIED AREA
Sports Medicine
Paper II

1. Introduction to Sports Medicine
2. Adaptation of cardiovascular response to exercise
3. Metabolic and hormonal response to exercise
4. Adaptation of neuromuscular response to exercise
5. Sports medicine for special populations- young, female and old athlete
6. Environmental physiology- Exercise in heat, high altitude, underwater etc
7. Heat injury and fluid balance
8. Ergogenic aids - Doping
9. Communicable diseases in sports and personal hygiene
10. Management of common ailments
11. Sports traumatology
12. Medical care of sports teams
13. First Aid, CPR and Emergencies
14. Massage and exercise therapy
15. Sports nutrition

Practical Syllabus

1. Assessment of athletic performance & body typing
2. Dope collection procedure
3. Muscle testing
4. Joint function evaluation
5. Clinical examination-case study- X-Ray & Radiography
6. Bandages
7. Taping
8. Resuscitation (C.P.R)
9. Massage
10. Physiotherapy (Introduction to Electro, Cryo & Hydro therapy, Sauna bath)
11. Group Discussion & Clinical Meetings.

DIPLOMA IN SPORTS SCIENCE

GENERAL RULES (Examination Ordinance)

1. The examination for Diploma in Sports Sciences shall consist of two parts:

   Part A (Theory)
   Part B (Practical)

The duration of the course shall be one academic year.

2. A candidate shall be eligible for appearing at the examination for Diploma in Sports Sciences if:

   (a) He/She has passed the Bachelor Degree Course form any recognized university of Bangladesh or the other equivalent examinations conducted by any university recognized by Bangladesh.
   (b) Has gone through the admission criteria and secured admission to the course.
   (c) Has put in 90% attendance in theory and practical classes separately.

3. There shall be a final examination at the end of the academic year and a candidate shall have to separately pass in Part-A (Theory) and Part-B (Practical).

4. To pass the examination, a candidate must secure 40% marks in each theory paper, sessional and practical examination.

5. The sessional marks in each theory paper and in practical examination shall be added to the total marks secured by the candidate in the final examination.

6. The sessional marks shall be calculated based on the marks secured by the candidate in the term examinations, unit tests and assignments.

7. If a candidate fails in any one part (Theory or Practical) or both, he/she will be required to reappear and pass the examination in full.

8. A candidate must complete the course of study and pass the examination within a total period of three years commencing from his first admission to the course.

9. The division shall be assigned to the successful candidate on the following basis:

   Second Division: 45% and above but below 60% of the aggregate marks.
   First Division: 60% and above of the aggregate marks.

   Distinction: 80% and above in a paper of Part-A (Theory) or Part-B (Practical) Distinction and division obtained by the candidate shall be Mentioned in the Diploma awarded to the candidate.

10. Those candidates who fail in only one theory paper or Part-B (Practical) shall be eligible to appear at the supplementary examination in that paper of Part-A (Theory) or Part-B (Practical) to be held as per the dates announced by the university.

11. For supplementary candidates, the result of the final examination shall be declared on the basis of the marks actually obtained by the candidate in each of the papers he/she has passed in the annual examination plus the marks obtained in the paper in which he/she took the supplementary examination. The supplementary candidate shall be ineligible for division and place on the merit list.

12. The candidate who is declared failed in the annual examination shall appear as an ex-student in all the papers and the sessional marks previously obtained by him shall be carried over.

13. The examination fee as prescribed by the university will be charged.

14. In partial fulfillment for the requirements of the course every candidate shall write a project on an approved topic and submit to the Institute one week prior to the commencement of final examination. The Project will carry 200 marks of which 50 marks will be assigned for viva-voce.

SCHEME OF EXAMINATION

Paper	Nomenclature of paper	Sessional Marks	Min. pass mark	Marks
I	Specialization (Theory)-Two Papers	20	40%	200
II	Specialization (Practical)	20	40%	200
III	Allied Area (Exercise Physiology, Sports Bio-mechanics, Sports Medicine and Sport Psychology)-Two Papers	20	40%	150
IV	Measurement and Evaluation- Two Papers	20	40%	150
V	Project	20	40%	200
	Total	100		900
				Grand Total 1000