

Government of Bihar
Department of Sports
Syllabus for Recruitment of Sports Trainer in Bihar

Part-A (General Knowledge)

Total Marks-30

1. **Current Affairs and History:-**
Freedom Fighters and Important Personalities Regarding Bihar.
2. **Sports History of Bihar.**
3. **Olympic, Commonwealth, Asian Games & National Games**
 - (i) Historical Background & Significance.
 - (ii) Ancient/Modern Olympic Games.
 - (iii) Commonwealth & Asian Games.
 - (iv) Functions of IOC.
 - (v) Organization & Conduct of Games.
 - (vi) Brief Introduction about winter and Para Olympic.
4. **Sports Association/Federation/Awards in India.**
 - (i) Introduction to sports governing bodies at National and International level.
 - (ii) Indian Olympic Association-Objective & Functions.
 - (iii) Sports Schemes (Central and state).
 - (iv) National and State Sports award.
5. **Terminology used in all Sports.**

I. General/ Scientific Principles, Conditioning and Methods of Sports Training.

1. Scientific Sports Training.

- (i) Meaning and Definition of Sports Training, Physical fitness, health related fitness and performance related fitness.
- (ii) Aim, Characteristics Principles of Sports Training.
- (iii) Definition of Load and Overload, Symptoms of Overload, Remedial Measures.
- (iv) Super Compensation- Altitude Training, Cross Training.
- (v) Classification of Physical Exercise (General and Specific).
- (vi) Warm up, definition types, importance of warm up and method of conditioning.
- (vii) Strength Training modalities and strength training for different population (children, females and senior citizens).
- (viii) Exercise techniques for alternative modes and non-traditional implement training.

2. Sports Performance

- (i) Nature and definition of sports performance.
- (ii) Exercise prescription, steps and Periodization of strength training.
- (iii) Model of sports Performance & Performance factor.
- (iv) Programme design for resistance training.
- (v) Inter relationship among performance, capacity and training structure.
- (vi) Methods of fitness development:- Aerobic and Anaerobic Exercises.
- (vii) Programme design for aerobic endurance training.

3 . Motor abilities

- (i) Introduction to Motor abilities & their Classification.
- (ii) Structure of fitness/condition.
- (iii) Strength-Means and Methods of Strength Development:- Weight Training, Isometric, Isotonic, Circuit Training etc.
- (iv) Speed- Means and Methods of Speed Development:- Repetition Method, Downhill Run, Parachute Running, Wind Sprints.
- (v) Endurance- Means and Methods of Endurance Development:- Continuous Method, Interval Method, Repetition Method, Cross Country, Fartlek Training.
- (vi) Flexibility:- Means and Methods of Flexibility Development:- Stretch and Hold Method, Ballistic Method, Special Type Training- Polymetric Training.
- (vii) Coordinative ability:- Means and Methods of Coordinative ability Development- Sensory Method, Variation in External Condition Method, Combination of Movement Method, Type of Stretching Exercises.

4 . Training Process

- (i) Concept of Training Load- Definition of and Types of Training Load, Factor of Load, Function of Load, Load monitoring, recovery.
- (ii) Principles of Intensity and Volume of stimulus.
- (iii) Technical Training- Meaning and Methods of Technique Training.
- (iv) Tactical Training- Meaning and Methods of Tactical Training.
- (v) Training Principles (Overload, individualization).

5. Periodisation

- (i) General concepts related to periodization and definition.
- (ii) Types of Periodisation-Single, Double, and Multiple Periodisation.
- (iii) Preparatory Period, Competition Period and Transition Period.
- (iv) Periodisation models.
- (v) Top form of Periodisation.

6. Training Plan

- (i) Training Plan- Macro Cycle, Meso- Cycle, Short term Plan and Long Term plans.
- (ii) Planning- Training Session.
- (iii) Programme design and techniques for flexibility, quickness and balance training.
- (iv) Evaluation of Physical fitness components (Test, measurements & evaluation of motor ability).

7. Talent Identification

- (i) Meaning & Definition of sports talent.
- (ii) Principles of Talent Identification.
- (iii) Physical Fitness Test- Health Related Fitness Battery Test. Health Related Physical Fitness Test.
- (iv) Anthropometric- Measurement: Method of Measuring Height, Standing Height, Sitting Height, Method of Measuring.
- (v) Skill Test- Types Specific Sports Skill Test.

II. Anatomy and Exercise Physiology

- 1. Introduction of Anatomy, Systems of organization in the human body and Exercise Physiology.
- 2. Skeletal Muscles and Exercise-
 - (i) Function of Skeleton-Ribs and Vertebral Column, joints of body and their Types. Structure of the Skeletal Muscle, Muscular Contraction, Type of Muscle fiber, Muscle Tone.
 - (ii) Gender Differences in the Skeleton.
 - (iii) Effect of exercises and Training on the Muscular system and Bone.
 - (iv) Physiology of Strength training and Performance and Physiological basis of fatigue and recovery.

3. Cardio Vascular System and Exercise.

- (i) Structure and function of heart, Blood Circulation and Cardiac cycle at rest and during exercise Cardiac cycle & Stroke Volume-Cardiac Output.
- (ii) Cardiovascular control during exercise- acute response and long-term adaptations in cardiovascular system Determination of target heart rate.
- (iii) Bioenergetics- aerobic and anaerobic energy metabolism during exercise, contributions of different energy systems to various sports and games, Lactic acid and its relevance in sports.
- (iv) Physiology of training-effect of VO₂ max performance homeostasis and strength.

4. Respiratory System, High Altitude training and exercise.

- (i) Basic anatomy of respiratory system. Internal & External respiration lung volumes and capacities. Respiration at rest and during exercise, second wind and stitch.
- (ii) Ventilation and The Anaerobic Threshold. Effect of exercises and training on the respiratory system.
- (iii) Environment, age gender and sports performance.
- (iv) High altitude training- Immediate Physiological changes in high altitude, long term adaptations, importance of high altitude training.
- (vi) Body temperature regulation in hot and cold environments.

5. Energy Metabolism

- (i) Metabolism- ATP-CP, Anaerobic Metabolism-Aerobic Metabolism- Aerobic and Anaerobic energy production during rest and Exercise.
- (ii) Lactic acid and its relevance in sports.
- (iii) Ingestion to energy metabolism (Carbohydrate, Protein and Fat), Glycogen Loading.

6. Sports Biochemistry, Nutrition and Physical Performance

- (i) Sports Biochemistry, Definition, Aim and importance. Exercise Metabolism (Anabolism and catabolism).
- (ii) Storage of fuels in the body, relevance of carbohydrates and lipid for sports and exercise.
- (iii) Glycolysis (aerobic and anaerobic) glycogen and lactic acid metabolism, factor affecting fuel utilization during the exercise.
- (iv) Biochemical basis of fatigue and recovery modes.
- (v) Importance of Biochemical monitoring of athletes during Sports training.
- (vi) Transportation of Proteins, store oxygen Haemoglobin and Myoglobin.
- (vii) Biochemical adaptation during sports training, overtraining and biochemical marks of overtraining.
- (viii) Basic Components of food, sources & function, Balance Diet.
- (ix) Nutrients- Role of Carbohydrate, Fat, Protein, minerals, vitamins and water during Exercise. Digestive System Hydration. Weight management.
- (x) Pre competition, during competition and post competition diet.
- (xi) Hygiene and Health-Meaning of Hygiene: Types of Hygiene and Management of Sports Nutrition, Role of Nutrition in Sports, Nutritional supplements for performance enhancement.

III. Sports Anthropometry

- (i) Nature and scope in sports. Body composition.
- (ii) Concept of physique- Physique in different sports and Games Stomata type- Different components, importance and scope in sports.
- (iii) Human growth. Physical growth and development changes in relation to age. Adolescent growth spurt-Effect on training.
- (iv) Adolescent growth spurt-its effect on training.

(v) Role of Anthropometry in Talent Identification for Sports.

IV. Sports Psychology

1. Introduction to Sports Psychology- Concept and importance of Sports Psychology. Scope of Sports Psychology, Effect of Personality on Sports Performance.

2. Emotional Processes and Sports performance

- (i) Definition of Emotions, Stress, Fear, anxiety and Aggression in Sports.
- (ii) Role of Thinking and Sport Performance.
- (iii) Emotional stability, regulation in Sports.
- (iv) Arousal- Performance relationship in Sports.

3. Motivation of Sports

- (i) Meaning of Sports motivation, Type of Motivation, Techniques of Motivational enhancement, Achievement Motivation.
- (ii) Psychological basis of sports motivation.
- (iii) Interest, attitude, aptitude.
- (iv) Principles and Process of Goal Setting in Sports, Benefits of goal setting.

4. Psychological Preparation in Sports

- (i) Meaning, Importance and concepts of Psychological Preparation.
- (ii) Pre Competition Period (Long term and short term preparation).
- (iii) Competition period.
- (iv) Optimizing Team Behaviour and Performance- Difference between team and Group.
- (v) Application of positive psychology for Excellence in Sports.
- (vi) Mental Toughness Training- Ideal Performance State.

5. Sociological Issues for optimizing Behaviour and Performance

- (i) Social characteristics of sports performance.
- (ii) Group and Team Work.
- (iii) Basic approaches of Leadership.
- (iv) Concept characteristics and application of Flow State in Sports.

V. Sports Medicine

- (i) Meaning, definition and importance of Sports Medicine.
- (ii) Basic Anatomy of Muscular skeletal system.
- (iii) Sports Emergencies and First Aid.
- (iv) Injuries in Sports, Management of Sports injuries and its Rehabilitation- Strapping/ Tapping, RICE Therapy.
- (v) Major Sports Injuries- Classification of Injuries, skin, Ligament, Bone, Soft tissues and Muscular skeleton problems prevention, Treatment and Rehabilitation.
- (vi) Risk factor, preventive measures and Prevention of Illnesses in Sports.
- (vii) Overuse Injuries, Prevention, Treatment and Principal and Phases of Rehabilitation.
- (viii) Recovery in Sports, Electrotherapy, manual therapy Exercise therapy.

VI. Role of Bio Mechanics and its contribution in the field of sports.

- (i) Basic of Kinesiology and its importance in Coaching, Mechanical axis anatomical and standard standing position, Types of Plans and Axis.
- (ii) Major muscles, joint and their actions, Types of joints, Types of muscles actions. Major muscles acting at important part of body, Posture Structure of motor action.
- (iii) Form of Motion- Linear motion and Angular motion, Displacement, speed, velocity, Acceleration, Distance and Newton's law and projectile motions.
- (iv) Type of Force- Internal and External forces, Centripetal and Centrifugal force, Principles of force, Friction, Gravitational force.
- (v) Lever, Equilibrium and Stability- Definition, Types of levers, Anatomical levers of body, principles of leverage, Centre of gravity and its implication, Factor affecting stability and equilibrium and

their implication.

VII. World/National Anti Doping agency and Anti Doping rule (2010).

- (i) Introduction of WADA and NADA, IOC Rules.
- (ii) Role of WADA and NADA in Fair Play.
- (iii) Doping- Definition, Classification, Hazards of Doping, Short and long term, IOC rules & Role of Coach and athlete.
- (iv) Prohibited Substance.
- (v) Testing Procedure.

VIII. Qualities of a successful Coach.

- (i) Philosophy of Coaching.
- (ii) Qualities & abilities of Coach.
- (iii) Method of teaching and coaching.

IX. Technique/ Skill/ Tactic

- (i) Importance and classification of technique.
- (ii) Description of technical/ Skill of games.
- (iii) Means for evaluation of progress and learning and performance of technique (Skill test, Statistics and Observation).

X. Planning and training for elite sports persons.

- (i) Long term Plan.
- (ii) Yearly Plan (Periodisation).
- (iii) Training Plans (schedule/ Programmers).
- (iv) Meaning and need for evaluation techniques in physical fitness variable (speed, strength, Agility, Endurance and Flexibility etc.)

XI. Inspection, Observation and Supervision of Sports Planning/ Coaching of Players.

- (i) Importance, Principle and technique of supervision and inspection of a Sports Planning or Coaching of Players.
- (ii) Qualities of good supervisor and inspector.