

**SPORTS AUTHORITY OF INDIA**  
**NETAJI SUBHAS NATIONAL INSTITUTE OF SPORTS: PATIALA**  
**DIPLOMA COURSE IN SPORTS COACHING**  
**REVISED SYLLABUS 2015-16**  
**THEORY AND SCIENCE OF WEIGHTLIFTING**

**1<sup>ST</sup> SEMESTER**

**THEORY PAPER – 1**

**1. Weightlifting History , Development and its organisation:**

a) Significant dates and events in the development of Weightlifting

Modern Olympic games.

(i) World Championships ( Men, Women, Senior, Junior and youth).

(ii) Commonwealth Games and Championship.

(iii) Asian Games and Championship.

(iv) Afro Asian Games and Championship.

(v) SAF Games.

(vi) Youth Olympic Games.

(vii) Indo-Pak Games

(viii) National Games and Championship.

b) Structure and Functions of controlling bodies of Indian weightlifting federation and international weightlifting federation.

**2. Technical Rules, their interpretations and Regulations:**

a) Weightlifting.

b) Power Lifting.

c) Body Building.

d) Terminology of Weightlifting, Power lifting and Body Building.

e) Para-Olympics.

**3. Organization and Management of Weightlifting Competitions:-**

a) Olympic Games and World Championship.

b) Continental Games and Championship.

c) Domestic Competitions in India.

d) Competitions systems including Olympic qualifying systems and body weight categories for men and women Weightlifters.

**4. Required Facilities for Weightlifting training and competitions equipments and their management:-**

a) Designing of Modern Weightlifting training and Competition hall.

b) Construction and Maintenance of the re-in forced Weightlifting competition and training platform.

c) Specifications of Weightlifting training equipments :- Squat Racks, Box's, Mini Platform, Super Power Racks, Multipurpose Bench for Bench Press, Gymnasium bench, Dumbbells, Multigyms, Parallel Bar, Horizontal Bar, Trampoline, Pommel horse, Volting Box, Hurdles ,Wall Bars, practice and competition platform and swing bells.

d) Personal Gadgets and their Specifications for the Training:-

(Shoes, Belt, Costume, shorts, socks, Bandages, Gloves ,Tapes sticking plasters, unitard and palm guards).

**5. Requisites of a Weightlifting Coach :-**

- a) Qualities and abilities of Weightlifting Coach. ( Knowledge, Planning , Organization of training, observation result, analysis and research, feedback, personality, social and psychological ).
- b) Concept and Philosophy of Weightlifting Coach.

**6. Requisites of a Weightlifters ( Male and Female ):**

- a) Physical.
- b) Motor and Coordinative abilities.
- c) Psychological.
- d) Understanding the technical and tactical abilities.

**7. Methods of Teaching and Coaching applied for Weightlifters training:**

- a) Class Organisation.
- b) Class Control.
- c) Class Management.

**8. Methods and Procedures for Weightlifters Pedagogic training:**

- a) Teaching Lesson. ( Introductory , Main and Concluding ).
- b) Coaching Lesson. ( Introductory, Main Part and Concluding Part ).
- c) Means of Weightlifting Training.

**1<sup>st</sup> Semester**  
**Theory paper – II**

**1. Warming up and Limbering down for Weightlifters :-**

- a) Principles.
- b) Advantages and Disadvantages.
- c) Types of Warming up and Limbering down:-
  - (a) General (b) Specific (c) Special/Competition Warm up
- d) Warming up for the Training & Warming up for the Competition .  
( Pre Competition ,During the course of competition ,warming up for the snatch attempt and warm up for clean & jerk).
- e) Warming up during different environmental conditions.
- f) Means and Methods.
- g) Specific Warm up for supplementary and assistance exercises.

**2. Techniques of snatch , clean and jerk and their development:-**

- a) Introduction, importance and classification of classical lifts.
- b) Stages, Phases and Elements of Classical lifts.
- c) Static and dynamic starting position of snatch and clean.
- d) Involvement of Muscles and joints at different phases and elements of classical lifts.
- e) The Rational Trajectory of the bar during the execution of classical lifts.
- f) Teaching and learning of rational weightlifting technique at different countries (Russia, Bulgaria, Cuba, Romania, China and India).
- g) Fundamental, Assistance/supplementary exercises for snatch, and clean and jerk.
- h) Faults, causes and necessary corrections of snatch and clean & jerk.
- i) Perception of individual technique until automatisisation, adaptation during the training and competition.

**3. Coaching Skills:**

- a) Methods of training, their merits and demerits.
- b) Methods of weightlifting training. (Loading procedures, volume, intensity repetitions, sets, average weight, average intensity, intensity co-efficient etc).
- c) Methods of powerlifting and body building training.
- d) Teaching aids and coaching aids for successful training.

**4. Methods of evaluation:**

- a) Tests.
- b) Application of statistics.
- c) Observation.
- d) Training note Book.
- e) Theory note Book.

**5. Tactics and Strategy:**

- a) Definition and classification.
- b) Developmental trends.
- c) Phases of teaching tactics.
- d) Tactical movements during training, Pre-competition, during the competition and weigh-in.
- e) Tactics for team championship and individual classification.

**6. Regulation of body weight:**

- a) Means and methods for decreasing and increasing the body weight.
- b) Scientific basis for identifying suitable weight category for better result over the

- competition.
- c) Performance evaluation and control of body weight.
- d) Nutrition during pre-body weight weigh in, pre-competition, during the competition and post competition.
- e) Nutrition during competitive week for training as well as competition.

**7. Common Weightlifting injuries and their Management:**

- a) Understanding the specific kinds of weightlifting injuries during the training and competition (open injuries, closed injuries, injuries to cartilage, Nerve injuries, contusion, fractures, dislocations, tendinitis and related condition, Bursitis, Myofascial pain and Syncope).
- b) Dealing with injuries (First Aid for dislocation, sprain, strains, Soreness, Training and around exercise).
- c) Common injury sites (wrist, fingers, elbow, shoulder, hip, knee groin pull, Patrice bruise, abraded skins, ankle and foot).
- d) Massage, physiotherapy, spinal and joint manipulation, cryotherapy Thermotherapy, Electro therapy, Naturopathy, acupressure & acupuncture etc for preventive measures.

**2<sup>nd</sup> SEMESTER**  
**THEORY PAPER-I**

**1. Motor Abilities:**

- a) Requirement for weightlifter's: A general view.
- b) Biomotor abilities and the methodology of their development.
- c) Mechanical, physiological characteristics of different motor parts.
- d) Means and methods of developing the required abilities.
- e) Means of an evaluation and analysis in relation to performance of weightlifters.

**2. Talent Identification in weightlifting and their Development:**

- a) Principles, methods and criteria used for weightlifting talent identification.
- b) Procedure and phases of talent identification.
- c) Various tests used for talent identification & their interpretation.
- d) Talent identification in Russia, Bulgaria, Germany, Cuba, USA and India.
- e) Sources of talent identification in India and its procedure.

**3. Planning and periodization of Weightlifter's Training:**

- a) Creating the training plan.
- b) The essence of planning.
- c) Integrating long and short term planning.
- d) The workout plan.
- e) Periodization of weightlifting (Soviet style, Bulgarian, Cuban and Indian methods), (micro, meso, macro, Olympic cycle and quadrennial plan).
- f) Peaking method, fatigue and overtraining.
- g) Single, double and multiple periodization.

**4. Training and competition performance evaluation of weightlifters:**

- a) Training and competition performance analysis.
- b) Recording the performance in the competition.
- c) Methods for identifying the factors for good or bad performance.
- d) Application of statistics for weightlifting training and competition.

**5. Methods and procedure for selection of weightlifter's for high performance:**

- a) Present weightlifting performance and their related sub-performance of weightlifters.
- b) Current classical performance and anticipated upcoming competition performance.
- c) Rate of growth of classical and semi-classical performances.
- d) Consistency of performance.
- e) Stages of selection of elite weightlifters.

**6. Principle and guidelines for finalizing the selection of weightlifting team:**

- a) Relation of body weight and performance of lifters.
- b) Suitability of individual and team classification with consistency.
- c) Age and experience of individual lifter.
- d) Physiological and psychological parameters.
- e) Group dynamics of individual lifter.
- f) Personality traits of individual lifter.

**7. Training of Women Weightlifters:**

- a) Women and weightlifting a great match.
- b) Physical and physiological differences between male and female weightlifters.
- c) Strength, speed and endurance differences between male and female weightlifters.
- d) Psychological and social conditions that can influence on women who are weightlifters.
- e) Weightlifting and mature weightlifters.
  - i) Losses in physiological functioning with aging.
  - ii) Training and mature weightlifters.

**2<sup>nd</sup> SEMESTER**  
**THEORY PAPER-II**

- 1. Principles of weightlifting training for different age groups::**
  - a) Weightlifting and children (Growth and maturation).
  - b) Weightlifting training for beginners and novices.
  - c) Weightlifting training for 12 years age group.
  - d) Weightlifting training for 14 years age group.
  - e) Weightlifting training for 16 years age group.
  - f) Weightlifting training for 18 years age group.
  - g) Weightlifting training for 20 years age group.
  - h) Weightlifting training for above 20 years age group.
  - i) Weightlifting training for National level weightlifters.
  - j) Weightlifting training for International level weightlifters.
  - k) Weightlifting training for physical handicapped/para Olympic lifters.
  
- 2. Psychological training of weightlifters:**
  - a) Components.
  - b) Short-term.
  - c) Long-term.
  - d) Pre, during and post competition preparation.
  
- 3. Recovery in weightlifting training:**
  - a) Theoretical pre-requisites of modernization of restorative means.
  - b) Medico-Biological restorative measures for weightlifters.
  - c) Rational diet including vitaminization.
  - d) Hydro procedures.
  - e) Balneology.
  - f) Physiotherapy.
  - g) Treatment at health resorts.
  - h) Natural means of restoration.
  
- 4. Weightlifting training, coaching and competition aids, trends in the development:**
  - a) Coaching aids for weightlifters and their trends of the development.
  - b) Coaching aids for weightlifting coaches and their trends of the development.
  - c) Required teaching aids for weightlifting coaches and their trends of the development.
  - d) Improvisation of weightlifting equipments for training execution.

5. **Preparation of the weightlifter's for main competition to perform their best:**
  - a) Building the mind of a weightlifting champion.
  - b) Philosophical and theoretical issues relating to mental attitude.
  - c) Pre-contest phase:
    - i) Understanding the primary conditions of the competition.
    - ii) Getting to know the lifter.
    - iii) Making weight and preparing for during testing.
    - iv) Dietary consideration before the competition.
    - v) Packing the competition bag, travelling and adopting to competition environment.
    - vi) Pre-competition head games.
  - d) The actual competition:
    - i) Determining the optimum number of warm up attempts and sets.
    - ii) Physical and emotional warm up & their timings.
    - iii) Planning the jumps in between attempts.
    - iv) Selection of poundage's for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> attempts.
      - v) Post-competition preparation.
6. **Development of specific required strength, power and flexibility for top performance:**
  - a) Specific strength, power and flexibility and their importance in weightlifting.
  - b) The major methods of exercise.
  - c) Application of degree of difficulties in weightlifting training.
  - d) Developing flexibility for weightlifters.
7. **Sports Marketing.**
8. **Computer application.**



## **1. Teaching and Learning the proper movements and methods with good posture .**

- a. Walking .
- b. Jogging.
- c. Running.
- d. Jumping.
- e. Squat.
- f. Sitting with Snatch grip and clean position.
- g. Various class formations (single line, double line, parallel line semi-circle, circle etc.
- h. Commanding the group (attention, stand-at ease, right turn left turn, about turn and right wheel quick march etc.

## **2. General warming up exercises –**

A) Teaching of juggling, running, Sprinting, Standing, Bounding, Jumping and combined exercises, exercises with own body weight towards various ways, and various paces and various durations and various repetitions as required.

B) Teaching callisthenic and exercises for various parts of body (joints, Muscles) including rotations, Swinging, pulling, Pushing, throwing, thrusting movements and partner exercises.

C) Teaching the various stretching exercises (individual, partner, passive and ballistic movements) Plyometric exercises.

D) Exercises with different sports equipment's with different weights.

Gymnastic sticks, Gymnastic benches, parallel bar, Horizontal Bar, Wall Bar, Spring Board, Trampoline, medicine Ball, Hurdles, dumbbells, kettle bells, dommy barbells, boxes, medicine balls own body weight and partners body weight etc.

## **3. Specific Warm-up and special warm-up-:**

- a) Specific warm-up exercises according to the skill/task.
- b) Specific warm-up for particular muscle groups, involve joints movement direction and demand.
- c) Competition warm-up for Snatch and up to competition first attempt.
- d) Competition warm-up for Clean & Jerk up to competition first attempt.
- e) Cooling down exercises during the training and competition.

## **4. Familiar with Weightlifting training and competition equipment's -:**

a) Specification, Standard manufacturing firms and maintenance of Weightlifting training equipment's. such as IWF approved Weightlifting barbell sets, Boxes, Squat Stand, Training platform and weightlifting electronic equipments.

b) improvisation of Weightlifting training and competition equipment's.

c) Manufacturing and installation of re-in forced competition and training permanent and portable Weightlifting platforms.

d) Weightlifting testing equipment's –physiological, Biomechanical, Anthropometrical, psychological.

e) Arrangement, placement and installation of Weightlifting training and competition equipment's under Weightlifting training hall and competition venue.

- f) Specification standard iwf approved competition equipments, firms and their maintenance.

## **5. Interpretation of IWF technical rules with its regulation.**

- a) IWF rules and regulations:-
- b) Power lifting technical rules:-
- c) Body Building technical rules:-
- d) Terminology of Weightlifting ,Power lifting, Body building , Training diary, Intensity, Average intensity, Intensity co -efficient ,Volume, Intensity zones, Average weight.

## **6. Method and procedure of weightlifters pedagogical training ( teaching, coaching)**

- a) Class organization, Class control, and class management, class formations, single line, double line, semi- circle, circular Pyramid.
- b) Teaching lesson plan (introductory, main, concluding part)
- c) Coaching lesson plan (introductory, main, concluding part)
- d) Process of Introduction, demonstration, explanation, observation, correction, Recreation, Feedback and self-feedback etc during teaching and coaching.
- e) Circuit training.

## **7. Teaching and training the fundamental exercises of Weightlifting, power lifting and bodybuilding.**

- a) Classical lifts of Olympic Weightlifting (Semi classical, assistance, supplementary, Power and general under two hands Snatch. Semi classical, assistant, supplementary, Power and general under two hands Clean and jerk)
- b) Teaching of squat, Bench press, and Deadlift for Power lifters and Para Olympic lifters.
- c) Teaching of muscle building exercises for Body builders Legs, arms, back and abdominals along with compulsory and optional poses.
- d) Stages, Phases and elements of two hand Snatch and two hands clean & jerk.

## **8. Teaching the technique of classical lifts.**

- a) Rational technique of two hands Snatch and two hands Clean & Jerk
- b) Static and dynamic start of two hands Snatch and two hands Clean & Jerk.
- c) Path of the bar during execution of classical lifts.
- d) Teaching and learning stages of weightlifts at different countries (Russia, Romania, Bulgaria, Cuba German, China and India.
- e) Faults causes and its correction for two hands Snatch and Clean & Jerk.
- f) Involvements of muscles and range of joints during the execution of classical, semi classical, assistance, and supplementary weight exercises.
- g) Perception of individual technique until automatisisation, adoption & mastery during the training and competition.

## **9. Trials and weightlifting officiating**

- a) To perform the duties & responsibilities of referee.
- b) To perform the duties & responsibilities of jury.
- c) To perform the duties & responsibilities of announcer.
- d) To perform the duties & responsibilities of marshal & technical director.
- e) To perform the duties & responsibilities of score sheet, score board & familiar with official and competition documents.

## **10 Evaluation of training & performance through tests.**

- Physiological tests.
- Biomechanical tests.
- Physical/motor tests.
- Performance tests.
- Application of statistics.
- Graphic presentation of training performance and performance indicators.

## **11. Tactics and strategy**

- Tactical movements pre competition
- Tactical movements during the course of competition.

## **12. Common Weightlifting injuries and its management, prevention and rehabilitation**

- Complete knowledge of First-aid.
- Rehabilitation through therapeutic means of recovery.
- Prevention of injuries through core group development, pre safety precaution and optimum balance between motor factors.

## **1. General and specific warm-up exercises with different equipment's.**

- General and specific warm-up exercises for snatch and snatch group of exercises.
- General and specific warm-up exercises for Clean and Clean group of exercises.
- General and specific warm-up exercises for Jerk and Jerk group of exercises.
- General and specific warm-up exercises for strength developing training.
- General and specific warm-up exercises for speed developing training.
- General and specific warm-up exercises for endurance & circuit developing training.
- General and specific warm-up exercises for flexibility developing training.
- General and specific warm-up exercises for co-ordination & balancing developing training.

## **2. Development of weightlifters motor abilities.**

- a) Methods of loading-: Progressive, Regressive, Bucket.
- b) Methods of training for the development of strength of all body parts explosive strength maximum strength and strength endurance.
- c) Means & methods of development of speed of all body parts.
- d) Means & methods of development of flexibility with strength of all body joints.
- e) Training related to development of co-ordination of all motor aspects of weightlifters.

## **3. Talent identification and their development-:**

- i. Visual observation and assessment of physical development, clinical investigation, and anthropometry along with general assessment of development with growth.
- ii. Examination of CNS, vegetative nerve system, muscular nerve system and muscles, cardio vascular system and respiratory system.
- iii. Functional tests of physical development working capacity and training condition Harvard step test, PWC Test.

## **4. Planning and periodization-:**

- Load, training load, super compensation, judgment of load, fatigue, overload.
- Volume, intensity, sets, repetition, average weight, average intensity, and intensity co-efficient.
- Intensity, volume, sets, repetitions exercise and sequence of exercises at preparatory period.
- Intensity, volume, sets, repetitions exercise and sequence of exercises at competition period.
- Intensity, volume, sets, repetitions exercise and sequence of exercises at transitional period.

## **5. Comparison between Training and competition performance analysis & evaluation of Weightlifters.**

- Present training and competition performance with past and future.
- Comparison of co-ordination with performance, sub performance and motor performance by using cardiogram.
- Recording the performance in the competition individual, opponent, category and teams.
- Fixation of the optimum target for training and competition performance.

## **6. Training of women weightlifters.**

- Physical, Physiological, Psychological, and social differences, between the men and women weightlifters for training prospects.
- Strength, Speed, Endurance, Flexibility, Balance, and co-ordination, differences between male and female weightlifters.
- Training differences between lower and upper category women weightlifters.
- Women Weightlifters training and volume and intensity at pre during and menstrual cycle.
- Women weightlifting training at injury post injury an prolonged training gap.
- Optimum women's weightlifting training in relation with training volume, intensity, exercises, Sequences of exercises, sets and repetition with effective training intensity training zone.

## **7. Weightlifting training for beginners & and different age groups.**

- Determination of growth and maturation & development level of individual lifters according to biological age, calendar age and training age of various age groups and genders.
- The training program for first 1<sup>st</sup> three years of training.
- The training program for 3<sup>rd</sup> 4<sup>th</sup> 5<sup>th</sup> and 6<sup>th</sup> year of training including stage of preparatory, pre competition, competition and stage of translation preparation.

## **8. Psychological training of Weightlifters for training and competition performance.**

- Training and competition performance anxiety and its control. (Trait& state)
- Motivation, Controlling emotion optimal goal setting
- Psycho regulation during competition and training venue
- Psycho therapeutic methods & auto genius training.

## **9. Recovery Process of Weightlifters training.**

- Pedagogical means of recovery
- Therapeutic means of recovery
- Natural means of recovery
- Nutritional & balance diet with proper routine
- Application of yoga, meditation and recreational means

## **10. Weight training for weightlifters and for other games and sports.**

- ❖ Weight training according to prime movers and synergetic, smaller V/s bigger ,agnostics s , antagonistic, isometric, V/S isotonic muscular development of weightlifters.

- ❖ Weight training for team games :- forward back spikes, blockers, mid-fielders
- ❖ Weight training for throwers& jumpers, sprinters etc.
- ❖ Weight training for combative sports persons.
- ❖ Weight training for racket concern sports person.
- ❖ Weight training for injured sports persons.

### **11.Preparation of Weightlifters for the main competition.**

- ❖ Building the mind of competitive weightlifters relating to the mental attitude.
- ❖ Understanding the primary condition and getting to know the lifters.
- ❖ Dietary consideration, pre competition head games and determining the optimum no. of warm-up attempt and sets
- ❖ Physical and emotional warm-up, planning of jumps in between attempts and selection of poundage's for 1<sup>st</sup> 2<sup>nd</sup> and 3<sup>rd</sup> attempts.
- ❖ Counting of running scoreboard and applying of tactics to win.

### **12.Teaching lesson practices**

- ❖ Introduction, command, turn-out, reporting, general warm-up, specific warm-up.
- ❖ Division of skill whole-part whole method
- ❖ Demonstration, explanation, observation, correction,
- ❖ Adequate recreation, rewards and punishments and removal of doubts

### **13.Coaching lesson practice**

- ❖ Introduction, command turn-out, reporting, general warm-up, specific warm up and ground formalities
- ❖ Demonstration, explanation, observation, correction and practice.
- ❖ Judgment of load, volume, exercises, sets, repetition intensity, average weight average intensity and zone of intensity.
- ❖ Optimum cooling down exercises removal of doubts and hints about upcoming session.

### **14. Method of loading according to training plan and aim**

- ❖ 1 RM pyramid, double pyramid, flat pyramid, wave like increase load and load increase steps.
- ❖ Station training, set training, circuit training, constant resistant and constant reps, increasing resistant and constant reps, change resistant and change reps, decreasing resistant and constant reps and contrast method.
- ❖ Multiple set system, single set, system, bulk system, cheat system, exhaustion system, force repetition system, burn system, peripheral heart action system, tri set system, compound set system, double progressive system, flushing and functional isometric
- ❖ Triangle program system, light to heavy, heavy to light system, multi poundage system, negative system, super overload system, priority system, rest pause system, blitz program isolated exercise system, Super pump system super setting system and super slow system.

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