## Unit-I

## SPORTS TRAINING

**Introduction:**

Sports’ training is a subject of great importance in Physical Education. It has developed to a high level in the western countries. Sports have become an important social and cultural activity of the modern world, which is being given the rightful place it deserves by the nations, and societies of the world. The contribution of sports towards the overall welfare of the human society may be capsuled in the following points.

* Sports help in the all round development of human personality.
* Provide ample and healthy means for recreation and relaxation of human mind and body.
* Are effective for rehabilitation and social adjustment of the injured, sick and handicapped.
* Provide opportunities for social interaction thereby finding peace and understanding among different people, nations, races, religions etc.
* Perform preventive and curative functions for several diseases in human body and mind.
* Provide healthy and socially acceptable opportunities for the people and nations to compete against each other.

**Meaning:**

Sports’ training is a recent extract to the field of sports science. Sport training is a conscious human activity. Also, it is a goal oriented activity. Therefore, it is obligatory for sports training to include in its subject matter the study of sports performance and performance capacity. Without an understanding of sports performance and performance capacity no effective and meaningful theories and methods of training are possible.

The word “Training” has been a part of human language since ancient times. It denotes the process of preparation for some task. This process invariably extends to a number of days and even months and year. The term widely used in sports. Sports’ training is done for improving sport performance. The sports performance, as any other type of human performance is not the product of one single system or aspect of human personality. On the contrary, it is the products of the total personality of the sports person. The personality of a person has several dimensions i.e. physical, psychological and social. Sports training therefore, directly and indirectly aims at improving the personality of the sportsman. Sports’ training is a systematic process extending over a long period. For best results the system of training has to be based and conducted on scientific fact and lines.

**Definition:**

1. “Sports training is the basic form of preparation of sportsmen” **- Matovejea**

2. “Sport training is a pedagogical (Teacher plan) process, based on scientific principles, aiming at preparing sportsmen for higher performances in sport competitions” - **Hardayal Singh**

**Aims and Importance of Sports Training:**

* To achieve higher level of performance in sports and games.
* To achieve Physical fitness and conditioning: Components, conditioning.
* To achieve Technical skill:Skill, Techniques.
* To achieve Tactical efficiency – Knowledge about game, teaching systems etc.
* **To Educate**:Beliefs, values, motives, interest cognitive abilities (perception, thinking, and memory).
* Develop Emotional abilities, personality traits (Regular, sincerity, punctuality).
* Educates good habits (eating, rest, hygiene, spend of leisure time) etc.

MODEL OF SPORTS TRAINING

AIM

COACH SPORTS SCIENTISTS

SPORTS PERSON

SPORTS TRAINING/SPORTS PERFORMANCE

SOCIETY

**Principles of Sports Training:**

Principles of sports training are the guidelines for coaches, teachers and sports persons for the formulation, implementation and control of sport training. These principles are valid for all aspects and elements of training. These are formed on the basis of knowledge gained from various sports science disciplines and successful practice. The principles of training can be general or specific. General principles are valid for the process of sport training as a whole. The specific principles however, are applicable to a limited part or aspect of training only i.e. principles of periodisation, principles of technical and tactical training etc.

Sieger (1978) discussed the history of training principles in GDR. Later Schnabel and Muller (1988) review the present state of principles

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1. **Principles of Formation of Training on the Basis of Performance Structure:**

Sports training aims at achieving high performance in future. Therefore, the structure of the sports performance should form the basis of foundation of training. All aims, objectives, means, methods and measures for different stages of training are to be desired from the performance capacity essential to achieve the sports performance. The performance structure, in combination of other factors like motor development, age, training state, periodization etc., determines the training structure.

1. **Principle of Continuity of Training:**

This principle states that sports training should be continuous and regular process. Continuous and regular training leads to improvement of performance capacity. But training is stopped for some period or there are too long intervals between training sessions the performance capacity starts decreasing. It is, therefore, of a utmost importance to ensure continuity of training.

1. **Principle of Progression of Load:**

Training load is the principal stimulus for starting the psycho-physiological processes of adaptation, which eventually lead to increase in performance capacity. A certain quantum of training load forces the organises to adapt to a certain level of psychic and physical demands. If the same load is repeated again and again, then it gradually loses its values as a stimulus for adaptation. Higher performance will be achieved when the organisers adapts to higher level of functioning. This is possible only by increasing the load. In sports training we want continuous improvement in performance. Therefore, we have to keep on increasing the training load from time to time or periodically.

The training load in sports training can be increased by two methods.

1. **Linear Method:** In this method the load is increased in every training session. The method is possible only during the initial days of training.
2. **Step Method:** In this method the load is increased in steps i.e. after an increase in load it is maintained for some training sessions before increasing it again.

**4.Principle of Uniformity and Differentiation:**

In order to achieve best results, the sports training should be formulated uniformely but allowing for individual differences. The goals, means, methods and organisation of training should be uniform. The training of advanced sportsmen must be formulated in consideration of following individual factors.

- Age, sex, training state, talent, past experience, personality, temperament, rate of performance improvement, load adaptation and recovery state, social factors etc.

**5.Principle of Progressive Specialization:**

The term specialisation in sports means use of specific means and methods for improving performance in a particular sport. Logically speaking specific means and methods lead to faster improvement in sports performance. But in real training process, which starts in childhood and can continue upto 25-30 years of life, the predominant use of specific means and methods throughout the long term process of training does not give good results.

It is now universally accepted that the sports training in all stages and phases, should be a judicious mixture of general and specific means and methods of training. The high proportion of general preparation in the initial years of training ensures all round development thus creating the base for future performance. It also helps to secure maximum ‘Trampes of training’ effect, which at later stages of training is not possible. In fact the total volume of general as well as of special preparation increase with the improvement in sports performance but their proportion to one another changes in favour of special preparation.

**6.Principle of Planned and Systematic Training:**

Sports’ training is a scientific and pedagogical process and for best result each and every part, phase and stage of training must be properly planned. As a result in training we have short and long term plans, which form the basis of implementation and assessment of training. It is however essential to realise that planning has to be done on the basis of a system, which has been worked out in consideration of the present available knowledge regarding best ways and means of achieving high performance through sports training. In other words correct planning of training is impossible without a through understanding of training systematic. The major aspect of systematic training is the correct proportion and sequence of various training elements contents and tasks.

**7.Principle of Cyclicity of Training:**

The process of sports training is formulated in shorter and longer cycles. A training cycle basically consists of a load phase and recovery phase. The shortest training cycles are based on the bigger cycles but at the same time the shorter cycles give rise to bigger cycles.

In sports training we have three types of training cycles i.e. Macro-cycle, Meso-cycle and Micro-cycle.

1. **Micro-Cycle:** It is the smallest training cycle and consists of 3 to 10 days. When the duration of micro-cycle is seven days it is called weekly cycle.
2. **Meso-Cycle:** Messo cycle is a training cycle of medium duration consists of 3 to 6 weeks.
3. **Macro-Cycle:** This is considered the longest cycle of training. Its duration can be from 3-4 months to 12 months or even longer.

**8.Principle of Regulation of Training:**

Sports’ training is a goal oriented long term process of preparation of sportsmen for higher performance. A coach should always know what affect the training in producing on the performance of the sportsman. If necessary the sports training should be changed or modified to ensure proper and effective development of performance. This is possible through continuous regulation of sports training. Regulation of sports training is a goal oriented process of training and performance assessment for controlling the process of performance development through training. It is, therefore, very important to prepare proper and detailed plans for various phases and periods of training to achieve results.

Warming Up

* Warming-up is a physiological and psychological preparation for the training/competition.
* Stimulation of the various systems of the body to meet the demand or task.

**Effect of Warming-Up:**

* Body temperature is raised by increasing the pulse rate upto 120-130 beats per minute.
* Stimulates the activity of the central nervous system, it improves coordination.
* Helps the athlete to prepare himself psychologically ready to take up changeable tasks in the competition.
* Helps to prevent injuries.

**Guide Lines:**

* Sufficient time.
* Exercise to all the parts and muscles of the body.
* Minimum 20 - 30 minutes before the commencement of the activity.
* General and specific exercises have to be involved.

**Types:**

**General Warming-Up:**

* It is a first phase of warm-up.
* The common means of muscular activity, where the athlete performs several exercises to all the parts of the body.
* The intensity should be medium.
* Duration of warm-up can be 10 – 15 minutes before commencement of specific warm-up.

Example: Calisthenics, stretching and jumping exercises.

**General Warm-Up again Sub-Divided in to**

1. **Active Warm-Up:** Warm-up through active physical involvement – Athlete involves in various exercises to raise the pulse rate or Body temperature.
2. **Passive Warm-Up:** Without physical involvement – Warm-up through muscle stimulation, sona batch, drugs, massage, etc.
3. **Specific Warm-Up:**

* Exercises and movements are performed related to the activity.
* Technical and material involvement.

Example: Specific exercises related to skill or Technique of the game.

**Procedure:** A warm-up always should start with slow running of various forms i.e. forward, side-ward, backward running etc which accelerate the blood flow it increases the pulse rate. After performing the exercise, the body will be ready for more strenuous activity to perform next group of exercise i.e. free hand, jumping, stretching exercises. Flexibility exercises, few short sprints and shuttle run may also be included. All these exercises are suitable in general warm-up.

During the specific warm-up, exercises which contain the technical elements with certain intensity should be performed. The purpose is to improve the coordination and also to increasing of systems working capacity. Specific warm-up is very important for the athletes whose skills are very complex.

Example: Hockey player practicing with different skills and technical movements before competition.

**Warm – Down (Cooling Down, Limbering Down)**

* Warm-down is equally important as that of warming up.

The purpose of the warm-down is to return your body condition to the pre-exercise level. This insures the return of normal blood flow from your extremities to the heart, and helps prevent muscle tightness. It is important to slow your heart rate; your recovery pulse should be under 100 beats per minute at the conclusion of your warm-down time.

Usually after the workout/game/activity a little recovery rest seem to show an individual normal in externally, but internal physiological process are not so. Hence a process of decelerating them is an at most important. The cleaning of the waste (Lactic Acid) that has developed during the release of energy i.e. ATP conversion has to be flooded out of the body. If not it will results to injury to the muscle and not able to perform next work out etc. For active participation of next session warm-down is the preparatory phase.

**Warm-Down Procedure:**

Warm-down method includes relaxing exercises, stretching exercises, cool-down, free-hand exercises, walking, slow jogging, repeated Belly breathing exercises are to be repeated number of times with a slow to moderate phase. It should be performed minimum of 20 to 30 minutes depending on the intensity of work and adaptation ability of the individual.

Main aim of the warm-down is to bring back the systems of the body to normal condition/ pre competition state.

**Training Methods:**

### Calisthenics

Calisthenics is widely used activity in the training sessions to improve basic fitness, co-ordination, rhythm in the body and conditioning ability. It contributes total body development and mainly using in the warming-up stage. It also helps in developing posture condition and to prevention of injuries. With a minimum infrastructure facility it can be organized. In this method the basic principle is to perform number of exercises with proper rhythm and continuously.

**Method of doing Exercises:**

* Freehand exercises are to be performed either from neck to toe or toe to neck.
* Involve all parts of the body i.e. muscles and joints.
* Always perform the exercises with slow pace and gradually increase the pace according to the abilities.
* Include freehand, jumping, coordinate and stretching exercises.
* Plan the program in every session of the training with a minimum of 20-30 minutes of the training period.
* While performing the exercises consider the individual performance structure, sex, age, etc.

### **Weight Training**

Weight training particularly used to improve strength. It is a form of doing exercises with additional weight or resistance.

Specificity is an important principle in strength training. The exercise must be specific to the type of strength required and related to the particular demands of the event. The coach should have knowledge of the predominant types of muscular activity associated with his particular event, the movement pattern involved and the type of strength required.

Weight training represents a convenient and motivating method of increasing strength. The coach must never forget that strengthening work can also be achieved by using simple agents such as partner exercises, own body weight, bounding, jumping etc. In the pursuit of explosive strength bounding, jumping, sprinting and depth jumping may be the most positive way to improvement.

**Principles:**

* Proper supervision by expert.
* Proper body movement and position.
* Never visit Gym alone.
* Back (spinal column) always straight.
* Always train but never strain.
* Proper weight must be used.
* Proper equipment with safety locks.
* Purpose must be clear.
* Lift the weight closer to the body.

**Preventive Measures:**

* Proper warming up.
* Strength and stability of the muscular system.
* Use correct technique.
* Sequence of exercises.
* Load procedure.
* Recovery pauses.
* Breathing system.
* Avoid one-sided training.
* Avoid Fatigue State.
* Always use safety equipment.

**Training for Children:**

Chances of more injuries to children from the strength training. Still, strength training is important for children and youth.

- Avoid heavy weight training program to the children below 14 years.

* Own body weight exercises, partner exercises, medicine ball exercises, weight training with low intensity is more suitable training program.
* Exercises should be done with low intensity; it should not exceed 50-60 percent of the maximum.
* Avoid stress on vertebral column.
* Teach correct technique and breathing procedure, it can be achieved by performing with low intensity.
* Always concentrate own body weight exercises with variations.

##### Circuit Training

Circuit training develops all-round strength and endurance capacity. It is a form of performing various exercises in a group continuously in a series of sets with prescribed intervals between sets. The variables here are the number of different exercises in a circuit, number of repetition in each set, and the recovery time between each set. An additional refinement is placing a time limit on a given number of repetitions and an overall time for a full circuit.

Circuit training is best done in Gymnasium or in sports hall where you can move easily from one exercise to another and exercise already set up in its own area. In this general and specific training program can frame to improve technical and tactical efficiency of the individual.

**Programme:**

* Arrange mostly in a circle.
* Place stations for exercise.
* Usually with 8 to 15 exercises in a circle.
* Popular form of doing exercises.
* Organize in such a manner that different muscle groups are exercised in rotation.
* It develops strength endurance and endurance capacity.
* Places at which the exercises are arranged are called as stations. They are arranged in a circle.

**Organisation:**

* Facilities available i.e. hurdles, weight’s, medicine balls, jumping exercises, own body weight exercises, partner exercises etc.
* Arrange more than one individual in each station, it develops competitive spirit.
* Perform exercises together in each station i.e. all starts at same time.
* Try to move next station in a minimum possible time.
* Proper supervision by the expert.
* Exercises and program should be planned carefully and preferably continue for several days, i.e. 2-3 months.
* Performance chart of each individual are to be maintained.
* Trainee should aware of the exercises and model of circuit.
* Load must be increased in time to time.
* Time should be fixed at each station followed by rest after the circuit

**Methods:**

1. Circuit Training – Continuous Method
2. Circuit Training – Interval Method
3. Circuit Training – Repetition Method

**TYPES:**

**1) General Circuit:**  **General Exercises**

1. Sit ups
2. Shoulder press
3. Leg Curl
4. Bench press
5. Half squat
6. Dips
7. Leg press
8. Hip flexion
9. owing
10. Good morning

**2) Specific Circuit: Football**

1. Push pass
2. Chest trap
3. Instep kick
4. Heading
5. Goal keeping
6. Dribbling
7. Throw-in
8. Diving
9. Ball Juggling
10. Half volley kick

### Interval Training

The principle of interval training is ***“speed work”***. A workload is applied generally from 30 to 40 seconds which speed up the heart this is followed by a recovery period. The subsequent intervals of work and recovery periods are adjusted in duration and number of sets to suit the athlete performance ability.

Interval training naturally involves alternating periods of work with periods of recovery. The advantage of interval training is that more work can be done with less fatigue than in continuous training.

The original form of interval running as conceived by the German pairs of coach Gerschler and physiologist Reindell was to repeat a set distance in a set time with a fixed recovery jog between. A typical session could be 200x8 meter in 28 seconds with a 100 meter recovery jog in 45 seconds between each fast run. As the athlete improved he could increase the number of fast runs or increase the speed of the fast runs or reduce the time spent in recovery.

**Procedure:**

* Based on principles, activity done with pauses (Intervals) of incomplete recovery.
* Training in a system of repeated efforts, in which a specific activity or skill of a game is carried out for a specific period of time alternately with measured recovery period.
* Widely used to improve speed endurance and speed in movement execution.
* Heart does not surplus 180 beats per minute i.e. representing a limit.
* Before activity starts bring heart rate 120 to 125 beats per minute, and same to be maintained before start of the next repetition.
* Recovery does not exceed 60 to 90 seconds.
* Dr. Gerchler and Reindell insist very much upon the following theory i.e. the recovery effort which strengthens the heart.

**Types:**

1. **Scholish** classified the interval training according to the intensity (Load).
2. **Intensive interval method:** In this method the intensity is 80 to 90 percent of the maximum.
3. **Extensive interval method:** In this method the intensity is 60 to 80 percent of the maximum.
4. **Harre classified interval method** according to the duration of the each repetition.
5. **Short time interval method:** Approximately 15 sec. to 2 minutes.
6. **Middle time interval method:** Approximately 2 to 8 minutes.
7. **Long time interval method:** Approximately 8 to 15 minutes.

* Short time interval method is more suitable for the development of an anaerobic capacity.
* Middle time interval method is suitable for the development of speed endurance capacity.
* Long time interval method is suitable for the development of endurance and aerobic capacity.

##### Plyometric Training

Plyometric training is a specific work for the enhancement of explosive power. Exercises or drills that are combine speed and strength it produces an explosive reactive movement.

**Principle:**

When a concentric contraction occurs immediately following an eccentric contraction, then the force generated can be dramatically increased. Thus the muscle must contract with in the shortest possible time. This is called “stretch shortening cycle”.

The key principle of training is that “the rate is more important than the magnitude (size) of stretch”.

**Basic Consideration:**

* Training load should be given according to the standard of the athlete.
* Certain level of basic strength should be achieved before starting the polymeric training.
* Proper execution of the exercise should be stressed at all levels. The key element in the execution of proper technique is the landing phase i.e. shock absorption.
* Load should be given in a progressive manner in order to allow for proper adaptation.
* Maturation of the athlete should be considered while designing program
* Exercises are to be designed according to the demand of the activity.
* Number of exercises and repetition should be planned based on the ability of the sportsmen.

**Safety Consideration:**

* Plyometric and weight training should not be given at the same session.
* Perform after warning up.
* Not to be done in a fatigue condition.
* Should not have any posture defects.
* Standard equipment.
* Sequence of exercises.
* Training must be stopped 2 weeks before the competition.

**Classification of Exercises:**

* Jumping exercises.
* Hopping exercises.
* Bounding exercises.
* Shock movement exercises.
* Medicine ball exercises.
* Exercises with special equipment like boxes, hurdles, ropes, steps etc.
* Depth jumps.

### Fartlek Training

Fartlek is a Swedish word; it means ***“speed play”.*** Fartlek Training means running with varying intensity according to the requirements of the athlete, and the distance and dictates of terrain. The athlete will use a terrain which undulates and makes varying demands upon him i.e. Hills, Woodland, Sand. like the alternating pace method, anaerobic periods provide a strong stimulus for the improvement of oxygen maximum. In addition, the demands of terrain stimulate strength endurance development and balance adjustment of ankle, knee and hip.

**Example:** Jog ten minutes, walk three minutes, run fifteen minutes, walk five minutes, sprint two minutes, jog three minutes, sprint ten minutes, run eight minutes, walk four minutes etc.

This is an hour’s training, and you can mix it up to suit yourself. Look at the trees; think your thoughts and come back feeling good. You plan the program as you go along.

This break from road and track, which can include a very hard session if you want, it is the great advantage of fartlek, and it is open to anyone at any level. This training is a popular form of improving endurance capacity.

**Advantages:**

* It creates an interest in sportsman.
* Nothing is imposed.
* Improves aerobic capacity.
* Effects on physiological and psychological qualities.
* Practice according to his will and wish.
* Practices on different surfaces and paces.
* Improves self-control, responsibility, and sincere to training.
* Avoids frustration during training program

# UNIT– II

# TRAINING COMPONENTS

**Introduction:**

Physical Fitness is the capacity to carry out responsible vigorous physical activity and includes qualities in pertain to the individual health and well being. Sports training largely depends on Physical Fitness. Physical Fitness improves the general fitness, health, organic functioning capacity, strength, stability of muscular and skeleton system etc.

Importances of Physical Fitness or motor abilities are the main criteria in sports training. As per Sabastian Coe - says that, the basis for overall physical fitness is achieved by improving your respiration and your circulation, and to the end the most effective activity is running. The longer you keep running and exercise well the longer you will stay well.

Physical Fitness is the basic criteria for every individual in the society. To lead a successful life an individual has to undergo fitness programmes in his daily life. It is an important programme for sportsman. Through fitness a sportsman easily adapts motor abilities and conditioning.

Sports specialists traditionally define the term fitness as a physical capacity to perform a task. The types of physical capacities necessary to participate in a sporting contest vary between sports and within sports. From the many components of physical fitness most sports are mainly concentrated with strength, speed, endurance, flexibility and co-ordination.

###### **Meaning**

The ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure time activities and meeting emergency demands. It is the ability to endure, to hear up, to withstand stress, to carry on in circumstances where an unfit person could not continue, and is a major basis for good health and well being.

**Physical Fitness:**

* Fitness is the total functional capacity (adaptation of various systems of the body) to perform a specific task.
* Ability to carry our reasonably vigorous physical activities involving muscular strength, muscle endurance, cardio-respiratory endurance and flexibility.
* Fitness is the state which characterises the degree to which a person is able to function efficiently. Fitness is an individual matter, it implies the ability of each person to live most efficiently with in his potentialities.
* Physical fitness is the capacity to carry out responsible vigorous physical activity and included qualities in pertain to the individual health and well-being.

###### **Definitions:**

Physical fitness is the ability to carryout daily task with vigor and alertness, without undue fatigue, and with ample energy to engage in leisure pursuits and to meet emergency situations”. **– Harrison Clark.**

“Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserves of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him.” - **Nixon**

**Importance of Physical Fitness:**

Physical fitness is the fine tuning of the human body or engine. It enable us to perform up to our potential. Fitness can be described as a condition that helps us for better look, pleasant feel and do our best.

Improve health

* Increase efficiency of heart and lungs.
* Reduce cholesterol level.
* Increase muscle strength.
* Reduce Blood pressure
* Reduce risk of major illness such as diabetes and heart diseases
* Weight loss.

Improve sense of well-being

* More energy
* Less stress
* Improved qualities of sleep
* Improved ability to cope with stress.
* Increased mental sharpness.

Improved appearance

* Weight loss
* Toned muscle
* Improved posture

Enhance Social Life

* Improved self-image
* Increased opportunities to make new friends
* Increased opportunities to share an activity with friends and family member.

Increased capacities

* Increased systems functioning capacity.
* Increased resistance power.
* Improves cardiac health.
* Keeps body joint lubricated.
* Improves muscle mass and muscle tone.
* Reduce the chance of having heart diseases.
* Help to control glucose level in the diabetic person’s.
* Improves the balance of the body, which minimize the risk.
* Improves Neuro-muscular co-ordination.

**Physical Fitness Components:**

##### Strength:

Strength is not easy to define, and the common definition is “the ability to express force” is not precise enough. The strength needed to break away on the last lap of a 10,000 metres, differs from the strength needed to lift 200 kg barbell, and the strength needed to explode from the blocks in a 100m race. Thus much more specific sub-classifications of strength are necessary.

Strength is the ability of the body or its segments to apply force against resistance. It is an important component of power and speed.

**Types:**

1. **Maximum strength:** It can be defined as “the greatest force that is possible in a single maximum voluntary contraction”. It involves neither speed nor endurance factor. A slow heavy dead-lift is the classic example of the kind of strength. It is an important in those activities where the heavy resistance have to be tackle.
2. **Explosive strength:** (Elastic, power, Fast–Strength): It can be defined as “the ability to overcome a resistance with a fast contraction”. Both the contractile and elastic components of the muscle are assisted by reflex contraction in the expression of strength at speed. This ability is relevant to almost every event, and the ‘explosive’ quality is especially necessary in jumping, throwing and sprinting. It is a combination of strength and speed.
3. **Strength endurance:** It can be defined as “the ability to express force many times over, in an endurance environment”. Llike explosive strength it is also a product of two motor abilities. It is the ability to overcome or to act against resistance under conditions of fatigue.

**Methods of Strength Development:**

1. Weight training.
2. Circuit Training.
3. Polymeric Training.
4. Resistant Training.

##### Speed:

Speed development is closely inter-related and inter-dependent with other aspects of human performance, especially those of strength, and to a lesser extent endurance. It is closely related to the nervous systems where the number and frequency of the impulses within the muscle fibres create the more visual interpretation of what we see as speed or reaction. The most example of speed is seen in the sprinters, where speed of movement is paramount.

It has been defined as “the ability on the basis of mobility of the nervous system and muscular apparatus to perform movements at a certain velocity”

**Types:**

1. **Reaction Speed:** Is an ability to react efficiently and quickly to a signal.
2. **Movement Speed:** Is an ability to do a single movement in minimum possible time.
3. **Acceleration:** Is an ability to achieve speed of locomotion from a stationary position or from slow moving position.
4. **Locomotor Speed:** Is an ability to maintain maximum speed of locomotion for maximum possible duration or distance.
5. **Speed Endurance:** Is an ability to perform movement with high speed under conditions of fatigue

**Methods of Speed Development:**

1. Interval Training.
2. Polymeric Training.
3. Resistant Training.
4. Weight Training

##### Endurance: Endurance is the maximum work muscles can perform in repeated contractions.

* It relates to do work for a long time or period.
* It relates to working under fatigue conditions.
* It involves a large number of muscles.
* It involves work efficiency.
  + Endurance depending on the energy system used can be roughly divided into two

**Types:**

**General Endurance:** (Aerobic): The ability to resist fatigue under conditions where the oxygen take and consumption are kept at a steady state.

**Specific Endurances:** (Anaerobic): The ability to resist fatigue under conditions where lactic acid is accumulated in the muscles.

**Endurance Characteristics:**

1. **Short Term Endurance:** Performing activity with efforts of 2 to 8 minutes duration. Mainly a high percentage of anaerobic involvement exists in such efforts.
2. **Medium Term Endurance:** Performing activity with efforts of 8 to 30 minutes duration. Mainly anaerobic processes are involved, but an apparent ‘steady state’ has been already achieved.
3. **Long Term Endurance:** Performing activity with efforts in excess of 30 minutes duration and during which time there is no essential decrease in speed. The performance depends almost exclusively on aerobic efficiency. As the time increase the aerobic role becomes more exclusive. This type of endurance should be considered as aerobic endurance or cardio respiratory endurance.
4. **Speed Endurance:** Performing activity with resist fatigue resulting from loading at sub-maximum and maximum intensity (appox 85-100% maximum intensity) and the predominantly anaerobic production of energy. It is essential in sports demanding this type of endurance that speed is not reduced due to fatigue.
5. **Strength Endurance:** Performing activity with continuous express of Force relatively high strength efficiency when anaerobic by-products are accumulating.
6. **Anaerobic Endurance:** This is the type of endurance required for those events where the anaerobic energy pathway is involved. It is possible to sub-divide anaerobic endurance as follows:

### Short anaerobic - 25 sec. - Event - 100/200m

### Medium anaerobic - 25 to 60 sec. - Event - 400m

(Mainly Lactic)

### Long anaerobic - 60 sec. to 2 mins - Event - 800m

(Lactic plus Aerobic)

**Methods of Endurance Development:**

1. Fartlek Training.
2. Circuit Training.
3. High Altitude Training
4. Interval Training.
5. Resistant Training.
6. Weight Training

##### Flexibility:

Flexibility is defined as the range of movement in or around a joint or a series of joint. It depends on a variety of factors, including the bone, joint structure and the bulk of the muscle close to the joint.

Flexibility is the capacity to afford joint actions a full range of movement. In all the sports event development of both general and specific flexibility is essential to the quality of performance.

Flexibility is a basic element in the training of young and old athletes alike. Specific flexibility is founded upon general flexibility. Thus, general exercises lay the foundation for special exercises. The body must be well warm-up before flexibility work begins. Flexibility therefore comes after warm-up in a training session. Flexibility, both specific and general, must continue as a training activity throughout the year.

Flexibility is partly dependent upon the energetic process (ie. strength of the contracting muscle) and partly on the co-ordinative process (i.e. relaxing of the antagonistic muscle). So that the joint can be moved through a wider range. Rapid contraction and relax of Agonist and Antagonist muscles depends on the roll of central nerves system (CNS). Flexibility is the basic pre-requisite for a good execution of a sports movement.

Types:

1. **Active Flexibility:** This is the capacity to effect movement by contraction of those muscles, which naturally cause the movement.
2. **Passive Flexibility:** This is the capacity to effect movement with external help, usually in the ‘end’ position.
3. **Kinetic Flexibility:** (Dynamic): It is an ability to perform movement with large range when the body is in motion. Stretching muscles or opening joints, and involving the use of momentum i.e. Bouncing or Ballistic work.

**Methods of Flexibility Development:**

1. Active Flexibility Training
2. Passive Flexibility Training
3. Kinetic Flexibility Training
4. Yogic exercises & Training

**Co-Ordinative Ability (Agility):**

**“Co-ordination** is the speed and accuracy which the nerves system acts with correct muscle response to produce desired movement”.

1. **“Agility** is generally defined as the ability to change directions quickly and effectively while moving as nearly as possible at full speed”.
2. Co-ordinative abilities are important for the learning of sports techniques and for their continuous refinement and modification during the long term training process. It depends largely on central nerves system and their effect on various functions.
3. Co-ordinative abilities are primarily dependent on the motor control and regeneration process of CNS. The movement quality depends to a greater extent to rhythm, flow, accuracy etc. These enable the sportsman to do a group of movements with better quality and effect.

Types: **In sports seven co-ordinative abilities are important. In different sports the relative importance of these abilities is however different, they are**

1. **Orientation Ability:** It is an ability to determine the position of the body and its parts in time and space in relation to gravity, playing field, other players, ball, equipment etc. It depends up on the functional capacity of the sensory organs, eyes, vertebral apparatus and kinesthetic receptors.
2. **Coupling Ability:** It is an ability to meaningfully combine the movement of various body parts for successful execution of sports movements. It is also the ability to combine various simple movements into a meaningful and effective motor action.
3. **Differentiation Ability:** It is an ability to achieve a high degree of accuracy and economy of separate body movement and movement phases in a motor action. It depends largely upon the functional capacity of the kinesthetic sense.
4. **Balance Ability:** It is an ability to maintain the body equilibrium under static or dynamic conditions. It is the basic ability for all types of body movements.
5. **Rhythm Ability:** It is an ability to perceive the rhythm of a movement and to do the movement with the required rhythm. It is the important ability in learning new movements.
6. **Reaction Ability:** It is an ability to react quickly to a signal. Reaction ability depends on information uptake and passing to motor junctions to act according to stimulus.
7. **Adaptation Ability:** It is an ability to change the movement effectively according to the changed situation or to quickly start a new movement. It is linked with experience, technical, tactical efficiency, reaction and other co-ordinative abilities.

**Methods of Co-ordination Development:**

1. Co-ordination Exercises Training.
2. Agility Exercises Training.
3. Coordinative exercises - Drills.
4. Yogic exercises & Training.

# UNIT III

## TRAINING PROCESS

**INTRODUCTION:**Training load is the physical and mental demand made on the organism for the development of different qualities i.e. strength, speed, endurance, flexibility, coordination, technical, tactical etc., to enable the sports person to achieve high level sports performance.

Sports training load given during each training session must have a definite training task along with suitable means and proper methods. It is the bodily and nerves demand, made on the body, caused by well directed motor stimuli.

In training, load is not always given for improvement but also for maintenance and stabilisation of performance capacity. Load is also given sometimes for the purpose of accelerating the recovery processes.

**TRAINING AND COMPETITION DEMAND (FACTORS OF LOAD):**

These demands represent the actual act of doing a physical exercises or activity under training or competition conditions. The quantum of these demands is,

* quality of execution of the exercise – physical exercises.
* Type of physical exercise or training means – movement quality.
* Intensity of load – Percentage of load.
* Volume of Load – Repetition.

**FACTORS OF LOAD:**

Factors of Load are different parameters of training and completion demands. These are also referred to as components of load. The factors of load enable us to quantify load and thereby help in measurement and assessment of load which is indispensable for control and regulation of load and training. These are also essential for planning and analysis of sports training. There are four factors of load which are explained below.

1. **PHYSICAL EXERCISE**: Physical exercises are the principal means of training. According to the effect of physical exercise on the performance capacity in a sports these are classified into general, special and competition exercises. Each exercise depending on the body parts involved, the coordination required and the apparatus or implement used, produces a different type of load and hence a different effect on the performance capacity.
2. **MOVEMENT QUALITY:** The quality of movement execution in several sports has an effect on the load. In technique and tactical training the movement quality is an important factors of load, in addition to load intensity and volume. The load can be increased considerably by increasing the degree of difficulty of movement execution.
3. **LOAD INTENSITY:** Intensity of load is the degree of effort being made by the sportsman while doing an exercise. The degree of effort is always considered in relation to time. It is also equated with the amount of force or energy being spent in relation to time. In different sports and physical exercises, the degree of effort is judged and measured by taking into consideration different parameters. The intensity of load is usually expressed in percentage of the maximum possible intensity. Load intensity also has a unique relationship with the improvement of performance factors. A performance factor develops gradually and steadily when lower intensities are used. But the performance so developed is more stable. On the other hand, higher intensities enable faster but relatively unstable performance improvement.
4. **LOAD VOLUME:** The volume of load in the total amount of work done through an exercise or in a training session. As compared to load intensity the load volume is comparatively easier to measure and assess. Improvement of performance capacity of trained sportsmen is not a simple task. A certain optimum quantity of load volume achieved over a number of training sessions is required to start the processes of adaptation which will result in increase of performance capacity. In other words load volume has a positive and direct relationship with the ability to tolerate load.

**LOAD COMPONENTS (INTENSIVE AND EXTENSIVE)**

LOAD

INTENSIVE EXTENSIVE

OUTER AND INNER BODY

INTENSITY VOLUME

INTENSITY DENSITY DURATION FREQUENCY

**INTENSIVE LOAD:**

### Sub maximum – Maximum

80 to 90 percent – 90 to 100 percent.

**EXTENSIVE LOAD:**

### Low - Light - Medium

30 to 50 percent - 50 to 70 percent - 70 to 80 percent

**INTENSITY:** Increase or decrease in speed of run, weights in weight training, height or distance for jumps and throws, exercises etc.

**OUTER LOAD:** Stimulation of the neuromuscular system by a well directed motor stimulus i.e. all physical exercises.

**INNER LOAD:** Reaction or internal changes of the organism caused by outer load (external load).

* Can be found out by pulse rate, blood pressure etc.

**DURATION (Stimulus):** Physical exercises.

**FREQUENCY:** Number of Repetitions.

**DENSITY:** Duration of Rest.

**INTENSITY (LOAD):**

**Intensity Percent**

Low - 30-50

Light - 50-70

Medium - 70-80

Sub Maximum - 80-90

Maximum - 90-100

**TECHNIQUE – STYLE:**

* A way of doing something expertly.
* Technique aims executing a movement or combination of movements with high quality.

Style is individual expression of technique in motor action. No two sportsmen are alike in different factors which determine motor action. Therefore each sportsman, because of his peculiar psychic, physical and biological capacities realizes the technique in a different manner. It is his style.

A **technique** is a scientific and economic method to attain high sports performance. It is a method developed and improved the practice for the best possible solution of a definite sports skill. Technique is a theoretical model according to which the movements are done.

**Technique** is defined as the motor procedures for tackling a motor task. The systems of movements of body parts in a definite sequence are called motor procedure and these movements may take place simultaneously.

###### **INTRODUCTION**

Sports activity consists of sports Movements. A sports movement is a motor action complete in it self. The efficiency or effectiveness of these sports movements determines the sports performance. All factors of performance capacity are ultimately needed to increase the efficiency of the sports movement/movements during training or competition. As a result the sports performance in sports depends to a great extent on the efficiency or effectiveness of sports movements or motor action. In other words the factor technique / co-ordination is of high importance tasks to tackled in sports training.

**IMPORTANCE OF TECHNIQUE TRAINING**

Technical training means conscious improvement and strengthening of skill of sports with the aim of attaining highest proficiency in competition. Therefore adequate time shall be devoted to technical training in the total training process of sports person.

The process of motor learning in sports training is normally a long process. As the nature of motor learning is not uniform throughout, therefore, different types of means and measures are adopted to effect it positively and different times. The motor learning process is normally divided into three phases as described below.

**TECHNIQUE TRAINING:**

**PHASE-1:**

On the basis of the nature of motor coordination in the phase-I of skill acquisition the following measures in training is to be taken for effective motor learning.

* Analyze the present state of performance.
* Practice under easier and favorable conditions.
* Development of movement concept.
* Less stress on kinesthetic perception.
* Less correction
* Organize more competitions.

**PHASE-II**:

On the basis of the nature of motor coordination in the phase-II of skill acquisition the following measures in training is to be taken for effective motor learning.

* Help and encouragement.
* High volume of technique training
* High concentration and attention
* Practice under normal conditions
* Improvement of movement concept
* Stress on kinesthetic perception.
* High movement correction
* Organize more competitions.

**PHASE-III:**

On the basis of the nature of motor coordination in the phase-III of skill acquisition the following measures in training is to be taken for effective motor learning.

* Practice under difficult and different conditions.
* Development of movement concept.
* Accurate and exact / careful and clear feedback.
* Increased use of competitions.
* Ideo-motor training or mental practice.

**TACTICS:**

* The ability to organize the well coordinated body movements during actual execution or game.
* Tactics is the art of competing. It is the actual realization of strategy in practice.
* The art of planning sequence of movement execution to gain an advantage.

It is difficult to say where ends techniques and where begins tactics. The term tactics refers to the theory of directing and conducting sports competitions. It means utilization of one’s own technical skills, physical and moral traits to attain the competition goal within the frame work of valid competition rules, in a planned manner, making full use of the weaknesses of the opponent and preventing him from applying his skill.

The term **“Tactics”** and **“Strategy”** are used interchangeably in games and sports but in true sense their real meaning is different. Strategy is the overall plan of a sports person to successfully participate in competition whereas tactics is the actual realization of strategy in practice. The work strategy also means putting the tactics in to use as a team effort.

A sequence of movement made automatic by practicing that solves an individual or collective tactical task. It is seen in its execution and repetition under constant conditions by reliability, precision and by a rhythm required in the sporting event.

**IMPORTANCE OF TACTICAL TRAINING**

The tactical attitude of an athlete during a competition has become a performance determining factor. Because of the current level of performance it can be of crucial importance in deciding success or defeat. The term “Sports tactics” refers to the theory of directing athletic contests, which are expressed according to the various sports and events in three forms.

1. Individual events 2. Duel events 3. Team events

**AIMS AND TASKS OF TACTICAL TRAINING**

The main object of tactical training is to enable the athlete to plan athletic contests and to handle them in such a way that they can win or at lease produce a good personal performance.

Various limited objectives can be attained with in tactical training because tactical training is part of the total training process and is undertaking in close connection with the technical and physical preparation.

### TACTICAL TRINING:

**1. Acquiring tactical knowledge:**

* The athlete must know the rules and regulations of the competition / games and be able to use them to the best advantage in solving individual and collective tactical tasks.
* The athlete must posses knowledge on planning for contests so as to be able to take decisions in accordance with contest conditions.
* The athlete must have complete command of his game system and its variants.
* The athlete must know the relationship between tactics, technique, condition, temperature and will power.
* The athlete must know the tactical rules for the execution of tactical actions.
* The athlete must know and apply the laws of economy, purposefulness, variety and teamwork to plan and manage his contests.
* The athlete must posses theoretical knowledge in the process of perception, on the analysis of a contest situation on the theoretical solution of a problem.

**2. Acquiring tactical skills:**

* A skill is established as a conscious, automated action and functions as an automated method to produce an action. The athlete needs only limited attention to perform an action so that he is in a position to concentrate upon other tasks i.e., observing an opponent position, watching his own team members, watching playing etc.,

**3. Acquiring tactical abilities:**

It means the athletes capacity to apply his physical abilities and mental qualities, physical skills, tactical skills etc. to solve individual and collective tactical problems consistent with the conditions of competitions.

# UNIT IV

### TRAINING PROGRAM AND PLANNING

**INTRODUCTION:**

The division of a program into phases is termed periodisation. Each phase being a period within the days available. It is possible to apply the periodisation concept to the dominant ability within a sport.

Periodisation is the systematic formulation of sports training for achieving top form in a competition at a definite time. The process of preparing the sportsman to give his best performance in a particular competition called periodisation. Sport training is a performance and competition oriented process. It is planned and carried out for the purpose of participating successfully in sports competition. For example, the yearly speed program could be divided into the following periods or phases i.e. aerobic endurance, anaerobic endurance, developing the foundation of speed, specific speed, reaction time and agility.

**TOP FORM:** Goal of a coach should be to cause the athlete’s development to reach its peak at the time of major competitions. Therefore, the coach needs to design and co-ordinate effective cycles of training, for each of sports dominant abilities, within the various periods of the yearly plan so all athletes reach their peak at a appropriate time.

Sportsman is not in a position to give his best performance at any time during the process of training. Athlete has to train systematically in order to give his best performance in a competition at a particular time. If this is not done then it is most likely that he may give his best performance before or after the competition.

**“Top form is the optimum state of performance capacity which a sportsman achieved in a training cycle. Top form is a temporary phase of optimum performance capacity. It can be maintained for a long period”.**

**PERIODISATION - PHASES:**

Periodisation basically divided into three periods i.e. Preparatory period Competitive period and Transitional period. Further it divided in to the requirements of the Training/Preparation/Demand as classified below.

\* Preparatory period phase-I - Basic training (Fitness & Conditioning).

\* Preparatory period phase-II - Advanced training (Technical).

\* Preparatory period phase-III - High Performance Training (Tactical)

\* Competition period - Competition.

\* Transition period - Active rest, recovery period.

**WORK LOAD ON PREPARATORY PERIOD:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phase** | **Training** | **Physical**  **Fitness %** | **Technique %** | **Tactics %** |
| I | Basic Training | 60 | 30 | 10 |
| II | Advance Training | 40 | 40 | 20 |
| III | High performance Training | 30 | 40 | 30 |

**AIMS AND CONTENTS OF PERIODS:**

**PREPARATORY PERIOD PHASE - I**

* To regain the previous training state.
* Condition the sportsmen to take high training load in the next phases of preparatory and competition period.
* To develop fitness factors which form the base for the specific factors of performance.
* Less tactical preparation is done in this phase.
* Develop general motor abilities i.e. strength, speed, endurance, flexibility and coordination.

#### PREPARATORY PERIOD PHASE - II

* Aims at the development of condition factors on which the performance depends directly.
* High training volume.
* Technical training progresses on learning and perfection.
* Tactical training is not an important task in this phase. It is limited to the improvement of fundamental tactics and individual tactical abilities.

**PREPARATORY PERIOD PHASE - III**

* This is the last phase of preparatory period.
* It aims at preparing the individual for the competition phase.
* Tactical preparation aims an important in this phase.
* Preparing the individuals to achieve high level performance to meet the competition conditions.
* Concentrate more to adapt different tactics.

**COMPETITION PERIOD:**

* Aims to achieve top form and to maintain it for a sufficiently long period.
* Perfect in all training facts.
* Maintain general and specific motor abilities to perform technical and tactical elements during the competition.
* Technical performance volume increase sharply in the competition period. Tactical preparation is highly competitive oriented.
* Irrespective of sports a normal period of 4-6 weeks is needed to achieve top form.
* It is important to plan preparatory period to achieve top form during the competition period.
* Gain competitive experience with the aim of improving game skills and mental capacities.

**TRANSITION PERIOD:**

* Plan three to five weeks as required/available days to get proper recovery which immediately follows the next preparatory period.
* Aim during this period should be to maintain the physical gains required during the competition and preparatory period.
* Avoid complete rest which could lead to the loss of performance.
* Continue training for three to four times each week.
* Concentrate more on recreational activities.
* Use the transition phase to analyse past performance and construct next plan.

**TYPES:**

##### **SINGLE PERIODISATION:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months | Oct. | Nov | Dec | Jan | Feb | Mar | Apr | | May | June | July | Aug | Sept |
| Phase | 1 | | | | | | | 2 | | | | | 3 |
| Period | Preparation | | | | | | | Competition | | | | | Transi-  tion |

**DOUBLE PERIODISATION:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months | Oct. | Nov | Dec | Jan | | Feb | Mar | Apr | | May | June | July | Aug | Sept |
| Phase | 1 | | | | 2 | | | | 3 | | | 4 | | 5 |
| Period | Preparation-I | | | | Competition-I | | | | Preparation-2 | | | Competition-2 | | Transi-  tion |

**TRIBLE PERIODISATION:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months | Oct. | Nov | Dec | Jan | Feb | | Mar | Apr | May | June | July | Aug | Sept |
| Phase | 1 | | | 2 | | 3 | | | 4 | 5 | | 6 | 7 |
| Period | Preparation-1 | | | Competition-1 | | Preparation-2 | | | Comp.-2 | Preparation -3 | | Comp.-3 | Transi  tion |

**MICRO CYCLE – MESO CYCLE – MACRO CYCLE:**

**MICRO CYCLE:**It is smallest cycle consists of 3 to 10 days. When the duration of micro-cycle is seven days it is called weekly cycle. The duration of a Micro-cycle in case of trained sportsman is normally 5-10 days. The last training session or day of a micro-cycle aims at recovery and relaxation. A micro-cycle is much closer to the day-to-day training process and hence enables optimal loading of the sportsman.

**MESO CYCLE:** Meso-cycle is a training cycle of medium duration. It is composed of a definite arrangement of 3-6 micro-cycles or weekly cycles. Meso-cycle aims at tackling of definite training task as part of the total process of development of performance capacity or top form. Generally, a meso-cycle has one or two aims which can logically be achieved 3-6 weeks. In a meso-cycle aiming at direct preparation for a competition, the training should aim at achieving top form.

**MACRO-CYCLE:**This is considered the longest cycle of training. Its duration can be from 3-4 months to 12 months or even longer. Macro-cycles is formed by a certain arrangement of meso-cycles. Macro-cycle can have two aims.

1. Achievement of top form at a particular time i.e. in a particular competition.
2. Increase of performance capacity to higher level.

Macro-cycle is clearly divided in to three period, i.e. preparation, competition and transition period. But in case of double or trible periodisation there are two or three macro-cycles in a year. The motor development principles have a strong determining influence on the formulation of Macro-cycle in basic and advanced stages.

**TRAINING SESSION:** A training session is generally divided into three parts. But if there are additional tasks to be tackled then the plan can consist of more than three parts.

**I – INTRODUCTORY PART:**

This is the first part of the training plan. It generally consists of assembly and warm-up. It aims at preparing the sportsman mentally and physically for the main task of the training plan.

The physical preparation for the training session is achieved through optimum warm-up, which consists of doing physical exercises in a definite manner for the purpose of warming of the complete physical and physiological system of the organism.

Warming-up is of two types i.e. General and Specific warm-up. General warm-up aims at general physical preparation for the training activity. It consists of jogging for some time followed by loosening and stretching exercises. Specific warm-up aims at preparing the body for definite types of training activity. It consists of exercises, which are similar to the training activity in load and movement structure.

**II – MAIN PART:**

It is the second part of training plan. In this part the intended task or aim of training session is tackled or achieved. The aim or tasks of a training session can be of several types and hence the contents of the main part of training plan also cannot be of a uniform pattern.

If there is only one training task in a training plan then the main part is easier to organise. In case there is more than one task then the main part should be further sub-divided with adequate rest periods in between.

Before concluding main part plan lead-up or recreation activity to refresh the minds of the trainees.

**III – CONCLUDING PART:**

It is the third and final part of training plan. The concluding part aims at gradually bringing down the functioning level of the body to normal resting level. It also aims at facilitating recovery and relaxation after the exhaustive work done in the main part. The concluding part generally consists of two things i.e. cool down and assemble and informal discussion.

**TALENT IDENFICATION AND DEVELPEMENT:**

**LONG- TERM TRAINING OR JUNIOR TRAINING**

Highest standards of athletic excellence can be achieved only by those who have developed physical potentials, moral characteristics, psychological abilities and perfect command of the technique and tactics of their sports. It can be possible only by those who have developed the necessary prerequisites in their child hood and youth.

In view of this, long-term systematic and planned training in preparation for the highest standards or performance has attained major significance.

These long-term training process covers an extensive period, which last from childhood and youth until the athlete reaches the highest level of competitive efficiency. It begins with a generous program of basic training leading up to comprehensive development of athletic efficiency and then to specialized training in an event or athletic discipline.

Long time training should be divided in to two clearly distinct sections i.e.

1. Training of the younger generation (juniors).

2. Training of athletes for competitive sports.

## Training of the young sportsmen or juniors

The objective of the training of young athletes or juniors is to create general and special conditions for achieving the highest level of efficiency in the future. This is done by the gradual introduction of specialization of training. Due to the fact that development is greatly depended on age and other factors, the training of young sportsmen is further sub divided in two training stages.i.e.

A. Training of beginners.

1. Training of advanced athletes.

**2. Training of athletes for competitive sports**

This section comprises exclusively the training of athletes for competitive sports from the beginning of a systematic and specialized training up to for the time that the athletes reach the competitive sports level.

In practical work this prolonged training phase is also broken down into different parts, since athletes coming from the junior training Program must concentrate on other aspects of training and development that those who have been at the highest level of performance for many years. The long term training process, which covers a period of about 15 years, must be broken down into several parts in the practical need to have a clear picture and arrangement of the objectives and contents of the individual players of training. The objectives, tasks and contents of each sections of athletic training follow from the influence of the factors determining performance. This provides a frame of reference for the classifications of the training Program.

The peak performance age is an additional criterion for classifying the long- term training process. The term peak performance age means the period of time during which an athletes has the best biological prerequisites for achieving the highest level of athlete’s performances in his sports activity or event.

## **Long-term training program**:The minimum standards for commencing training and duration of training of beginners and advanced students going in for specific kinds of sports can be derived from the age at which the peak performance age begins and from the length of time its takes to develop the highest level athletic efficiency.

The athletes should be prepared in such a way they can start their highest level competitive training when they reach peak performance age (which is one or two years earlier). At that time the athletes should have attained the biological prerequisites required for the highest level of athletic efficiency and they should be in position to reach lower international level of performance in their sports.

**Sequence of phases in long-term training program:**Experience gathered in the individual events and categories of sports has shown that the sequence of phases of the long-term training program can be classified as indicated below. All ages mentioned here should be seen as guidelines. Minor deviations can be made either way for individual sports and based on the athletic learning abilities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Events** | **Basic Training** | **Advanced Training** | **High Performance Training** |
| 1 | **Co-coordinative activities**: Gymnastics, Skating, Pole-vault, Diving. | 4-7 yrs. | 8-16 yrs. | 17-19 yrs. |
| 2 | **Speed and Endurance**:  Sprints, Jumping, Throwing, Games which requires speed and strength, Judo, Boxing. | 9-12 yrs. | 13-16 yrs. | 17-22 yrs. |
| 3 | **Endurance Sports**:  Long distance running, Rowing, Games. | 10-12 yrs. | 14-16 yrs. | 17-21 yrs. |
| 4 | **Swimming** | 3-7 yrs. | 8-12 yrs. | 13-15 yrs. |

This information concerning the sequence of phases of the junior training program is based on year of experience gathered in practical training work on one hand and from the processes of biological development of children’s and young people in the other.

The chances of success are particularly good in sports in which conditioning abilities, physical abilities, fitness abilities, co-ordination abilities plays a dominant role in the overall structure of performance capacity.

**DETERMINING FACTORS (OBJECTIVE, TASKS & CONTENT) OF JUNIOR TRAINING PROGRAM.**

1. Achieve highest standard of performance in the age, which result in the later

Competitive age.

1. Personality development, formation of athletic performance and individual

Performance factor.

1. Performance structure of the specific sports or event.
2. Time span needed for achieving the peak level (top form) of performance
3. Existing standard of performance of expected trends of development in the last

Stage.

1. Age, biological, Psychological and motor qualities of athletes considering the

Different courses of development of the two sexes.