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SCIENCE OF SPORTS TRAINING DEVELOPING INDIVIDUAL PERFORMANCE OF THE PLAYER

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Introduction :

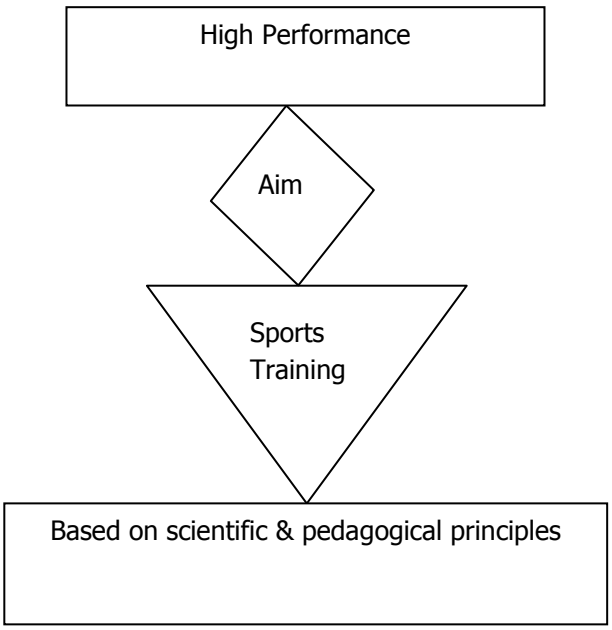
Sports training refers to specialized strategies and methods of exercise used in various sports to develop athletes and prepare them for performing in sporting events. Sports training is of vital importance for several fields of human activity i.e. performance sports, fitness, leisure and recreation sports, rehabilitation and physical education etc. it primarily deals with the laws rules and principles of improving the sports performance capacity of human beings.

Meaning:

Sports today is nightly competitive there is a very thin margin between and winner and a looser. It is, hence, each and every aspect of training in sports that is importance for successful participation in the competitive sports.

"Sports training can be defined as a pedagogical process, based on scientific principles aiming at preparing sports persons and non sports persons to strive for nigher performance in sports competitions and attain the best possible fitness".

Sports training is the process of preparation of sportsman based on scientific and pedagogical



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Principles aims at improving and maintained of higher performance capacity.

Aims of Sports Training:

The main aim of sports training is to prepare a sports man for a highest possible performance in a main competition in a particular sports / event.

Beside this following should be considered as the aims of sports training.

i. Improvement of physical fitness
ii. Acquisition of motor skills.
iii. Improvement of tactical efficiency.
iv. Education and improvement of mental capabilities.

Principles :

There are several universally accepted scientific training principles that must be followed in order to improve conditioning and sports performance. These principles include.

1. Principle of continuity of training:-
2. Principle of increasing of training load :
3. Principle of individual matter:
4. Principle of Active participating:
5. Principle of planned and systematic training:
6. Principle of General and Specific training:
7. Principle of competitive and specialized training :
8. Principle of Clarity:
9. Principle of Cyclist :
10. Principle of ensuring results:
11. Principle of Critical training load:
12. Principle of Adaptability :
13. Principle of Awareness:
14. Principle of visual presentation :
15. Principle of traceability :
16. Principle of Regulation of Training:

Feat**ures of Sports Training:**

Training methods:

When you play a sport, you want to do the best you can. Training improves your performance. Selecting the appropriate training methods to incorporate in your training programme is important for a number of reasons.

First, a focused, structured, individualized training program can increase your breating rate and you efficient use of oxygen. It can also help your body work at a higher level of exercise for a longer time because it helps it get rid of lactic acid. It also helps your body convert more fact to energy (That is lipid metabolism). Third, it also leads to physical changes in the muscles helping them to be more tolerant to the stresses caused by prolonged exertion, particularly by strengthen the connective tissue between muscles fibers so that they experience fewer micro traumas.

An important concept we need to keep in mind when we are talking about using training most effectively is our “acrobic ceiling’ ar vo2max when you exercise, for example by running or cycling, you breathe at a rate that gives your body enough oxygen to all you to continue doing the activity without too much distress. During this time you are running or cycling ‘arerobically’ that is, with oxygen.

What types of training should you do ?

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There are various types of training methods you can used to obtain the required improvement in fitness. These methods include.

1. Weight or resistance training
2. Polymetric training
3. Circuit training
4. Interval training
5. Aerobic or continuous training

1. Weight or resistance training:-

These training focuses on building up strength, power or local muscular endurance by exercising muscle against a resistance. The muscles contract to life a weight such a barbell a dumbbell or an item that offers resistance.

2. Circuit Training:-

Circuit training is an approach to training that can be used to develop several aspects of fitness. Circuits can be designed to include many types of activities and equipment that may be specific to a certain activities or sport.

3. Polymeric training:-

Plyometric training can be used to develop fast muscle fibre so that you can get power, particularly in the legs. Plyometric training should be implemented under supervision, since the technique and strength necessary to do the activities is broken by periods of rest to minimize injury.

4. Interval training:

Interval training is used to improve both aerobic and anaerobic fitness. It refers to having periods of intense physical activity between periods of recovery, to allow langer periods of training time at your peak performance levels. Doing ten 80 – metre sprints in ten seconds with a 60 seconds recovery is an example.

Continuous training:

Continuous training refers to aerobic activity performed at 60 to 90% vo2mas for at least half an hour with a minimum of three training sessions per week this training improves aerobic capacity.

Methods of strength development:

Three common effective methods of muscular strength development are:-

i. Isotonic exercises
ii. Isometric exercises
iii. Isokinetic exercises

Advantages of Isotonic contraction:

a) It involves basis movements (fix ion and extension etc) of joints, basic fundamental movements are easy to perform.
b) Muscle endurance is the assistant component developed.
c) Fast gain of muscle hypertrophy increased thickness
d) Some body weight can be used to perform exercise (situps etc)
e) Helpful in development of same specific skills. Skills which need fundamental movements of Javelin throwing basketball shooting etc.
f) It is an effective method to develop dynamic strength.

Dis advantages of Isotonic contraction :

a) Chances to have soft tissue injuries as it is dynamic in nature.
b) For effective results, sometimes good equipment's are required.
c) These exercises cannot be performed anywhere (eg sauaf etc)

Isometric Exercises:

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Isometric exercise are those contracting exercises where the length of related muscles remains constant throughout the workout.

Advantages :

1. Iso metric contraction can be performed without any equipment. (Using body weight).
2. As there is not rest phase in isometric contraction involved muscles working efficiency improves.
3. It is helpful in development of specific stalls, which need static movements of – shooting, archery etc.
4. It is an effective method to develop static strength (maximum strength)
5. Muscle endurance, is an assistant component developed.

Disadvantages:

1. Quick release of tension may cause injuries.
2. During isometric contraction blood pressure raises, this may lead to serious consequences.
3. Athletes of major game do not prefer to put much concentration on isometric exercises.

Isokinetic exercises:

Isokinetic exercises are those contractual exercises the tension in flexor throughout the movement. Isokinetic exercises are characterized with constant speed. In these exercises maximal contraction occurs throughout the fell range of motion.

Advantages:-

1. Fast development of involved muscles.
2. Isokinetic exercise develop flexor muscle and extensor muscles simultaneously.
3. It requires less efforts in compared with isometric or isotonic.
4. It is helpful in development of specific skills like swimming cycling etc.
5. Muscle endurance and speed are assistant components developed.

Disadvantages :

1. Controlled is kinetic contraction can be performed with equipment's only.
2. Isokinetic equipment's are advanced therefore need good maintenance.
3. It is a advanced method therefore require special supervision on performer.
4. It cannot be performed anywhere.

PERIODIZATION

It is a process of dividing the annual planning in to smaller phases of training in order to allow a programme to be set into more manageable segment to resume a correct peaking for the main competition the year.

The whole training programme is divided into three segments (preparatory, competitive and transitional) and the duration of whole training programme therefore depends upon the length of these segment.

- Preparatory Period
- Competition period
- Transitional period

Types of Periodization:

Periodization is normally done for one year. The three phases of sports form make on macro – cycle. According to the number of macro – cycles in a training year periodization is divided into three types which are:

1. Single Periodization:

When there is only one macro – cycle in one year it is called single periodization.

PP = Preparatory Phase
CP = Competition Phase
TP = Transitional Phase

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Macro Cycle - 1					
Preparatory Period			Competition Period		Transitional Period
PP-1	PP-II	PP-III	CP-I	CP-II	TP

2. Double Periodization :

When there are two macro – cycle in one year it is called double periodization.

Macro Cycle – I					Macro Cycle – 2					
Preparatory Period			Competition Period		Preparatory Period			Competition Period		Transitional Period
PP-I	PP-II	PP-III	CP-I	CP-II	PP-I	PP-II	PP-III	CP-I	CP-II	TP

3. Triple Periodization :

Where there are three macro cycle is one year, it is called triple periodization.

Macro Cycle – I					Macro Cycle – 2					Macro Cycle – 3					
Preparatory Period			Competition Period		Preparatory Period			Competition Period		Preparatory Period			Competition Period		Transitional Period
PP-I	PP-II	PP-III	CP-I	CP-II	PP-I	PP-II	PP-III	CP-I	CP-II	PP-I	PP-II	PP-III	CP-I	CP-II	TP

In multiple periodization the transitional period at the end of the first and or second macro cycle is not there. It is kept only at the end of the last macro cycle because this period of recovery and relaxation becomes necessary after about one year.

According to Matwey (1981) single periodization is suitable for developing the base for sports performance. Multiple periodization on the other hand is better for faster development of performance.