



# Unit - 10

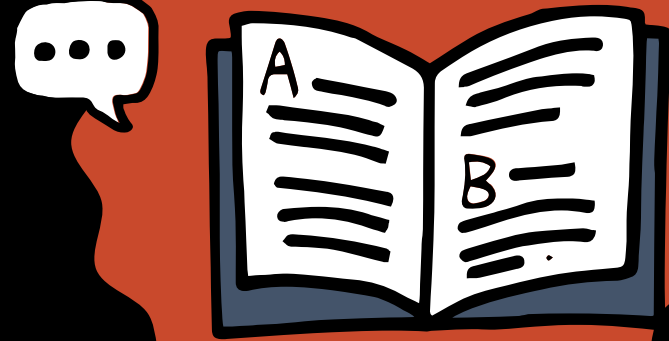
Physical Education





# Unit – 10

## Training in Sports





**10.1** Concept of Talent Identification and Talent Development in Sports

**10.2** Introduction to Sports Training Cycle – Micro, Meso, Macro Cycle.

**10.3** Types & Method to Develop – Strength, Endurance and Speed



**10.4** Types & Method to Develop – Flexibility and Coordinative Ability

**10.5** Circuit Training - Introduction & its importance

16. \_\_\_\_\_ is **not** the training method to develop Endurance.

- (a) Fartlek method (c) Continuous method  
(b) Isometric Method (d) Interval method

Ans. (b) Isometric Method

**Explanation:**

The Isometric Method is not used for developing endurance; instead, it's primarily used for strengthening specific muscle groups.

17. \_\_\_\_\_ is the process of enhancing the skills, capabilities, and knowledge of an individual for doing a particular job.

- (a) Training (b) Planning (c) Organising (d) Staffing

Ans. (a) Training

**Explanation:**

Sports training is a special process of preparation of sports persons based on scientific principles aimed at improving and maintaining higher performance capacity in different sports activities.

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- Board Sample Question Paper Fully Solved
- Solved Papers for Revision
- Unsolved Papers for Practice
- Solutions of the Unsolved Paper given on Website
- Ideal for the Practice Purpose

10/10

**CBSE CLASS XII**

**PRACTICE PAPERS**

**Physical Education**



Based on the Latest Syllabus issued by the Board for the 2024 Examination

**GURUKUL** 2024  
BY OSWAL Examination



## 10.1 Concept of Talent Identification and Talent Development in Sports

**Talent Identification** is essential to ensure that the appropriate players are being selected.

A selection must be made **fairly and equitably**. This demands a better understanding of player identification and **adopting a suitable selection policy**.

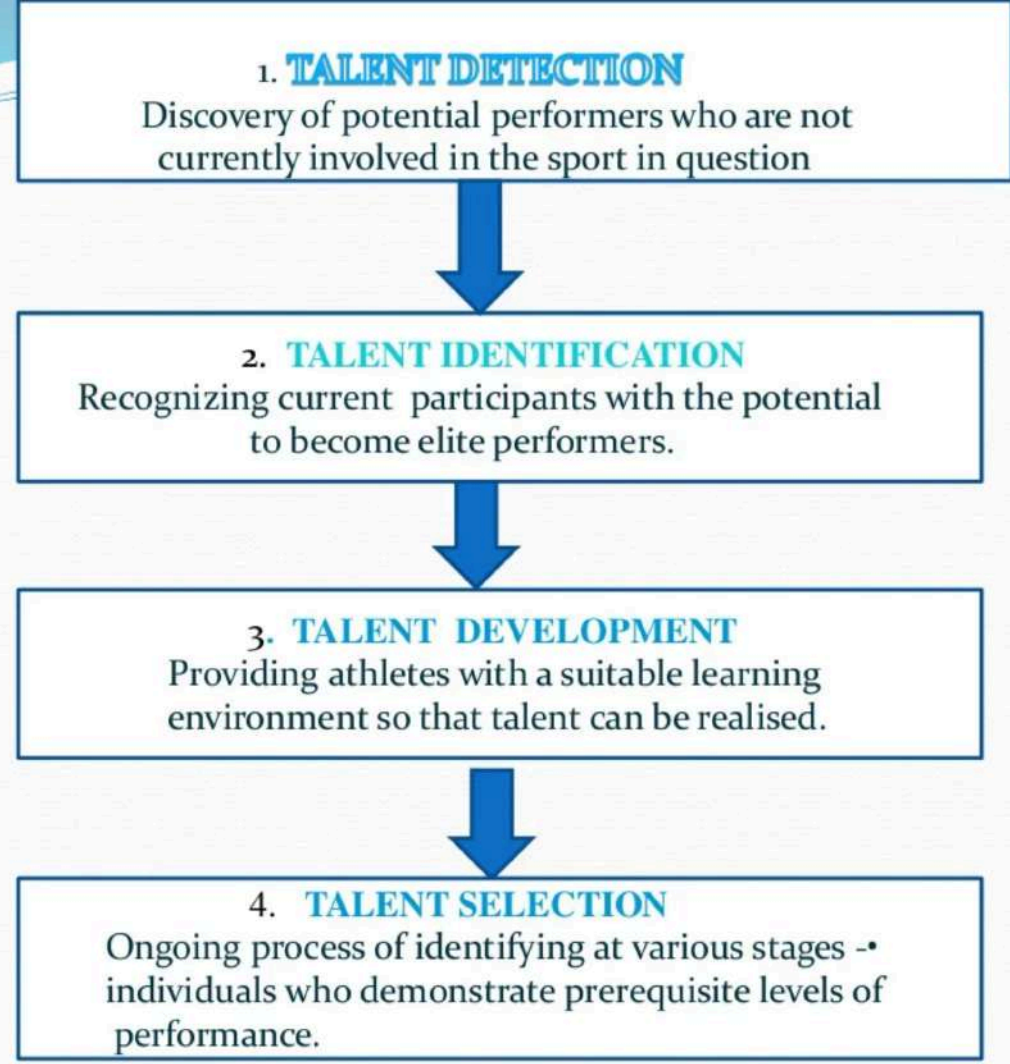


## Talent identification :

It is the method of recognizing current players that have the potential to excel. It involves an attempt to predict an individual's future capacity for performance.

### It is based on :

1. Physical attributes and Physiological skills,
2. Technical skills,
3. Psychological skills,
4. Cognitive skills, and
5. Social skills.

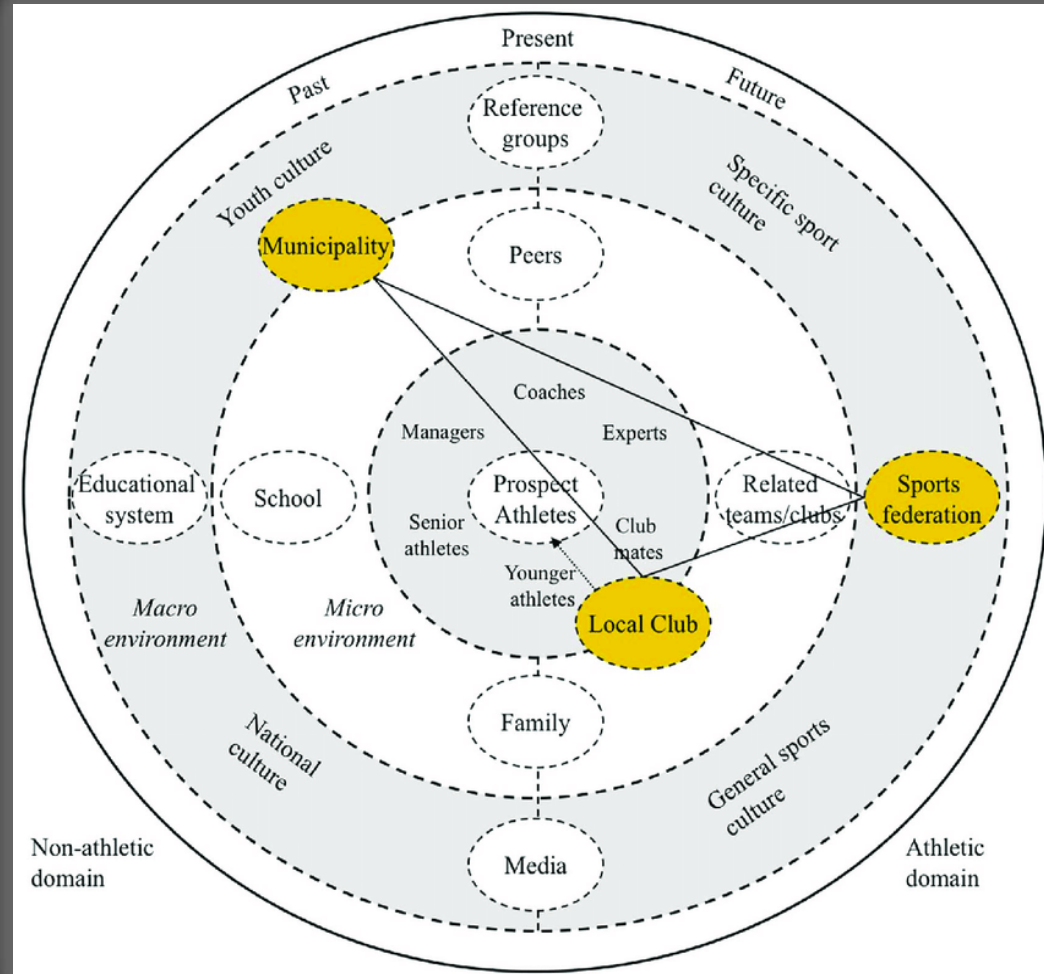


## Talent Development :

It is the method of providing athletes with a suitable learning environment so as build and retain strategically important skills among players.

## Key Factors :

1. Physical Factors
2. Physiological Factors
3. Sociological Factors
4. Psychological Factors
5. Obstacles



## 10.2 Introduction to Sports Training Cycle – Micro, Meso, Macro Cycle.

A training plan is constructed by incorporating **various training cycles**.

These cycles are:

1. Micro,
2. Meso and
3. Macro;

where **Micro is the shortest cycle** which may last for **3-10 days**.

**Meso cycle is the medium duration cycle** and may be done for **3-6 weeks**.

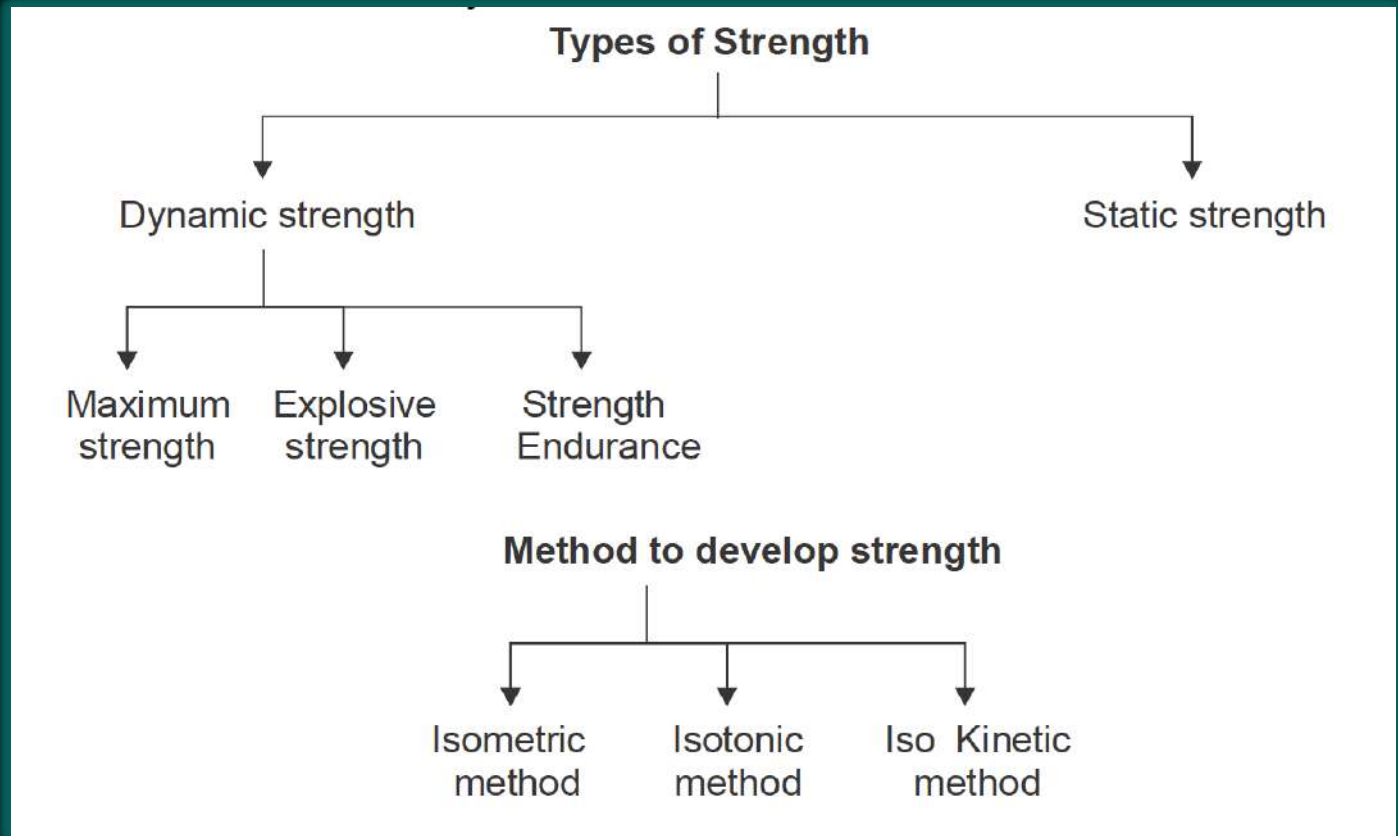
Lastly, **Macro cycle, this is the longest duration cycle** that lasts up to **12 months or a year**. A macro cycle consists of different micro and mesocycles.



## 10.3 Types & Method to Develop – Strength, Endurance and Speed

### 1. Strength

It is the ability to act or to overcome the resistance.



The following are its types :

(a) **Maximum strength** : -  
Ability to act against  
maximum resistance

(b) **Explosive strength** : Ability  
to act against resistance with  
Speed.

**Ex : Take-off in Long jump**

(c) **Strength Endurance** : Ability  
to act against resistance under  
condition of fatigue.

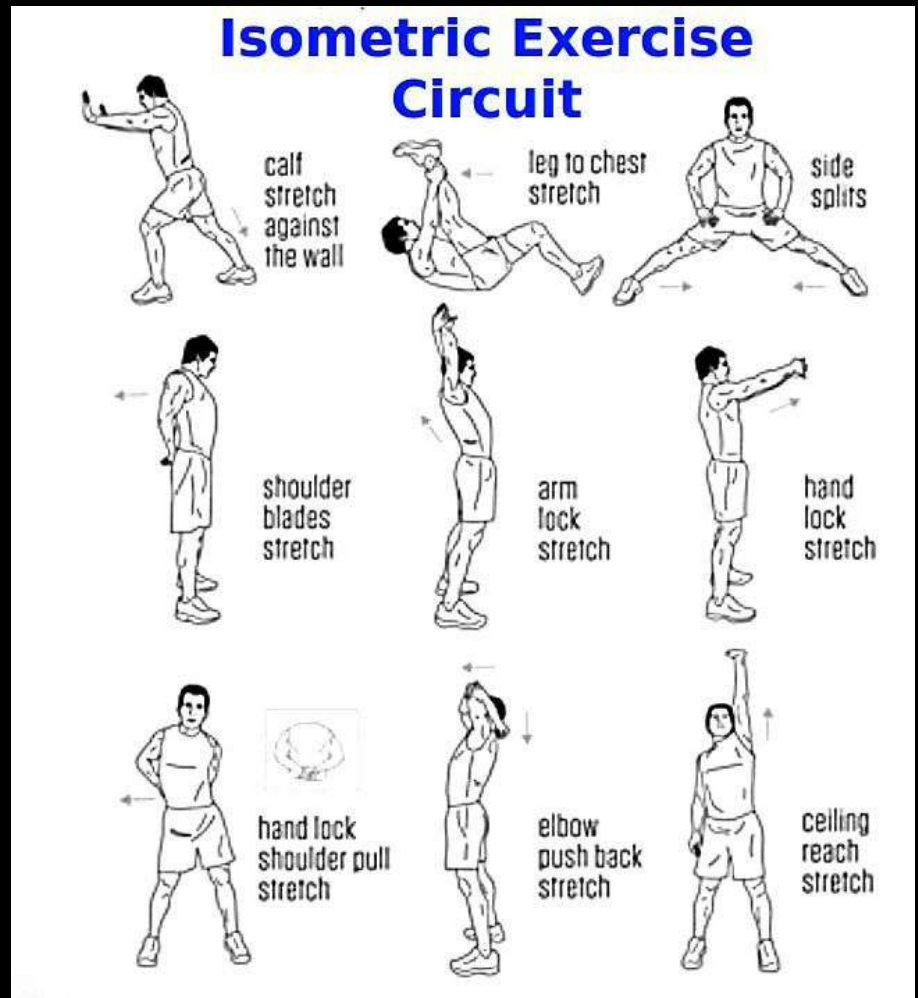


Following mention methods are used to improve strength :

### 1. Isometric Exercise :

The word Isometric is comprised of 2 words “Iso”, “same” and “metric”, “length”. Means when we do these exercises work done cannot be observed.

These exercise require less time and equipments and can be carried out anywhere.



These exercises are useful for maintaining strength in case of injury.

Eg : Archery, Weight lifting, Gymnastic are the examples of Isometric movements.

**Work done = Force X  
Distance moved**

but distance moved is 0,  
therefore work done is  
zero.



## 2. Isotonic Exercises :-

“Iso” Means ‘same’ and ‘tonic’ means tone.

In these types of exercise when we do movements it can be observed directly.

The length of muscles can be seen and called eccentric contraction and concentric contraction accordingly.

Example : When we throw a ball, jump, run, weight training,

**Jumping on the spot**



**If muscle contract and changes its length to produce force, the contraction type is Isotonic.**

These increase the length of the muscles and are good for conditioning in sports.



### 3. Iso-Kinetic Exercises :

“Iso” - ‘Same’ “and’ kinetic - motion’.

These exercises were introduced by **J.J. perrine** in 1968.

These exercise are done by **specially design machine** and are combination of Isotonic and Iso-metric exercises.



## 2. Endurance

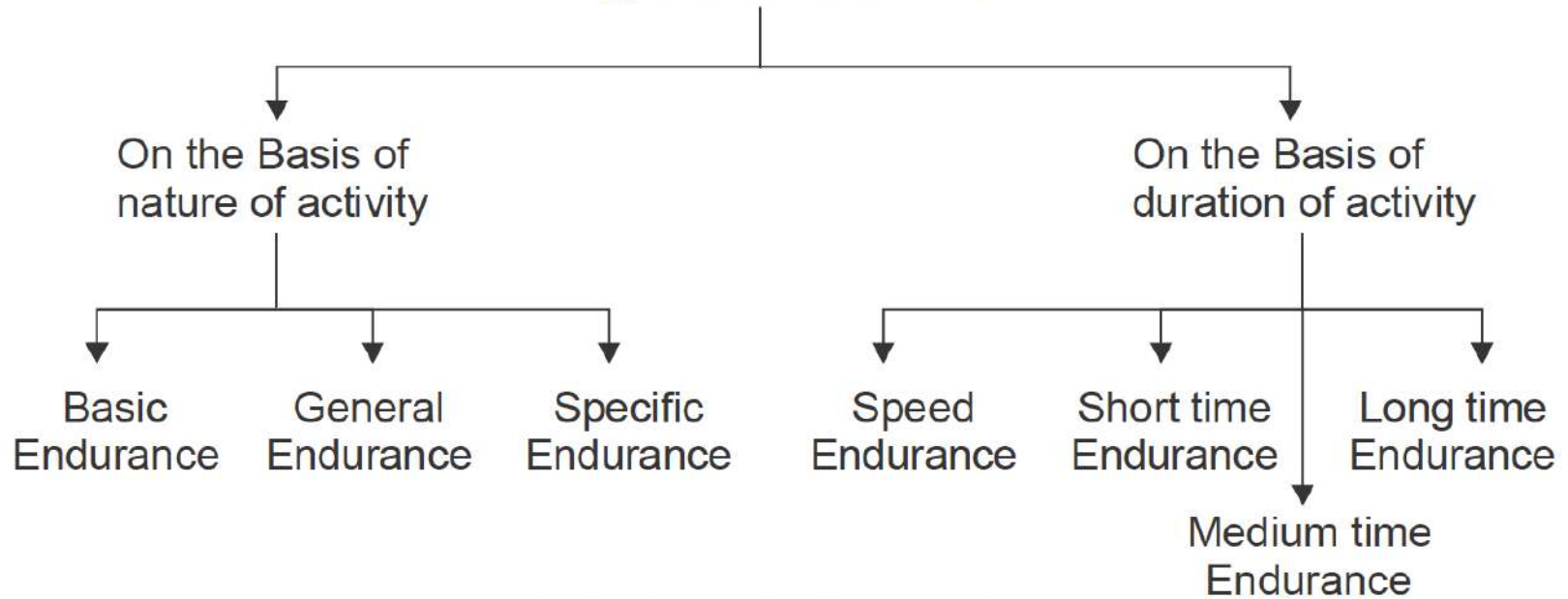
It is ability to continue the activity **under the condition of fatigue** or for a long time.

Or

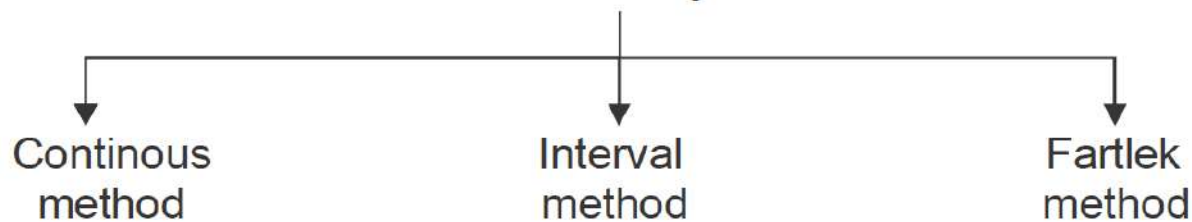
the capacity of something to last or to withstand **wear and tear**.



# Types of Endurance



## Methods to Develop Endurance



# Endurance

Types of endurance :

On the Basis of nature of activity :

## 1. Basic Endurance :-

It is the ability of an Individual to do the movement in which large no. of body and muscles involve at **slow pace for a duration such as Walking**, Jogging, Swimming at a moderate speed.



## 2. General Endurance :-

It is the ability of an individual to **resist fatigue satisfactorily** caused by different type of activities.

## 3. Specific Endurance :-

It is the ability of an individual to complete the **task without any fatigue**. It's requirement depends upon the nature of activity (Games and Sports) requirement of specific endurance of a boxer is different from that of a wrestler.



**On the Basis of duration of activity :**

**1. Speed Endurance :-**

It is the ability of an individual to perform a movement with high speed to resist of fatigue in activities upto 45 seconds.

**2. Short term endurance :-**

Short term endurance is needed to resist fatigue in sports activities lasting from 45 seconds to 2 minutes.  
Ex. 800 m race.

**3. The medium term endurance :-**

It is the activity lasting from 2.min to 11 minutes. Ex. 1500 & 3000 mts.



#### 4. Long term Endurance :-

It is needed for those sports which require more than 11 minutes time.

Ex. 5000m to 1000m cross country race.



## 1. Continuous Method :-

In continuous of method, the exercise is done for a **long duration without taking rest**. We do the exercise for a long duration.

So the intensity of work is low. The heart rate during the exercise for a sportsman should be between **140-160 beats per minutes**.

Its duration of exercise should be **more than 30 minutes**. Ex. running walking, cycling, cross-country race etc.



## 2. Interval Method :-

This method is very effective for developing endurance for track runners. **Intervals are given to the athlete in between** the repetition for recovery.

The Heart should go up to **180 beat/min**. and when the heart rate comes down to 120-130 beats/ min again the repetition/ work starts. The training load should be given again after checking the heart rate of the athlete.

Ex. Middle distance race, foot ball, hockey etc.



### 3. Fartlek Training Method :

This method was developed by Swedish coach “**Gosta Holmer**” in **1930** in **Sweden**. So it is also known as “Swedish play” or “**Speed play**” (changes his/her pace).

Athlete changes his/her speed according. So it is self-disciplined in nature.

The heart rate fluctuate between **140 - 180 beats/ minute**.

Fartlek training involves varying our pace throughout our run. Alternating between fast and slow pace.

# FARTLEK TRAINING ADVANTAGES & DISADVANTAGES

## ADVANTAGE

## DISADVANTAGES



Highly Adaptable



Effective For Endurance Training



Effective For Speed Training



Improves Fast Twitch Muscle Responses



Great For Group Training



Easy For Individual Training



If Improperly Performed, An Injury Can Occur



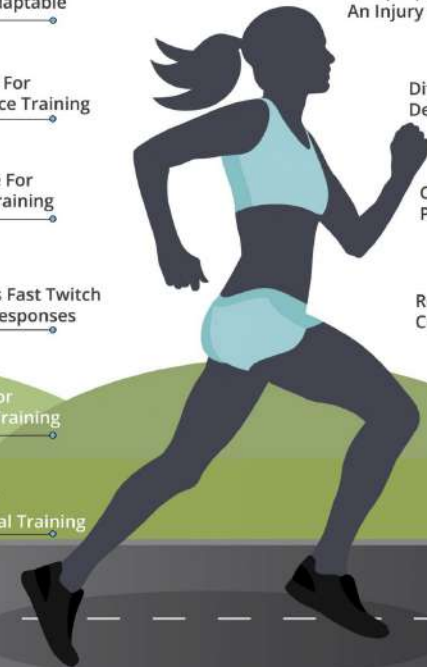
Difficult To Keep Detailed Metrics



Can Be More Painful To Perform



Requires A Little Creativity



### 3. Speed

It is the ability to do movement as quick as possible.

#### Types of speed

```
graph TD; A[Types of speed] --> B[Reaction speed Ability]; A --> C[Accelerations speed Ability]; A --> D[Loctomor Speed Ability]; A --> E[Movement Speed]; A --> F[Speed Enduence];
```

Reaction  
speed  
Ability

Accelerations  
speed  
Ability

Loctomor  
Speed  
Ability

Movement  
Speed

Speed  
Enduence

## Types of speed Ability :

- 1. Reaction speed ability :** It is the ability to act against a signal.
- 2. Acceleration speed ability :** It is the ability to achieve max speed in minimum possible time.
- 3. Movement speed ability :** It is the ability to do a single small movement in minimum possible time.
- 4. Locomotor speed ability :** It is the ability to maintain max speed as long as possible.
- 5. Speed Endurance :** It is the ability to do the movement as quick as possible under the condition of fatigue.

## Pace run :

Pace run means running the whole distance **with a constant speed**.

Generally 800 meter and above races are included in pace races.

An athlete must conserve his energy by reducing the speed.



## Acceleration Run :

Acceleration run are usually used to **develop speed indirectly** by improving explosive strength, technique, flexibility and movement frequency.

It is the ability of a sprinter **to achieve high speed** from a stationary position.

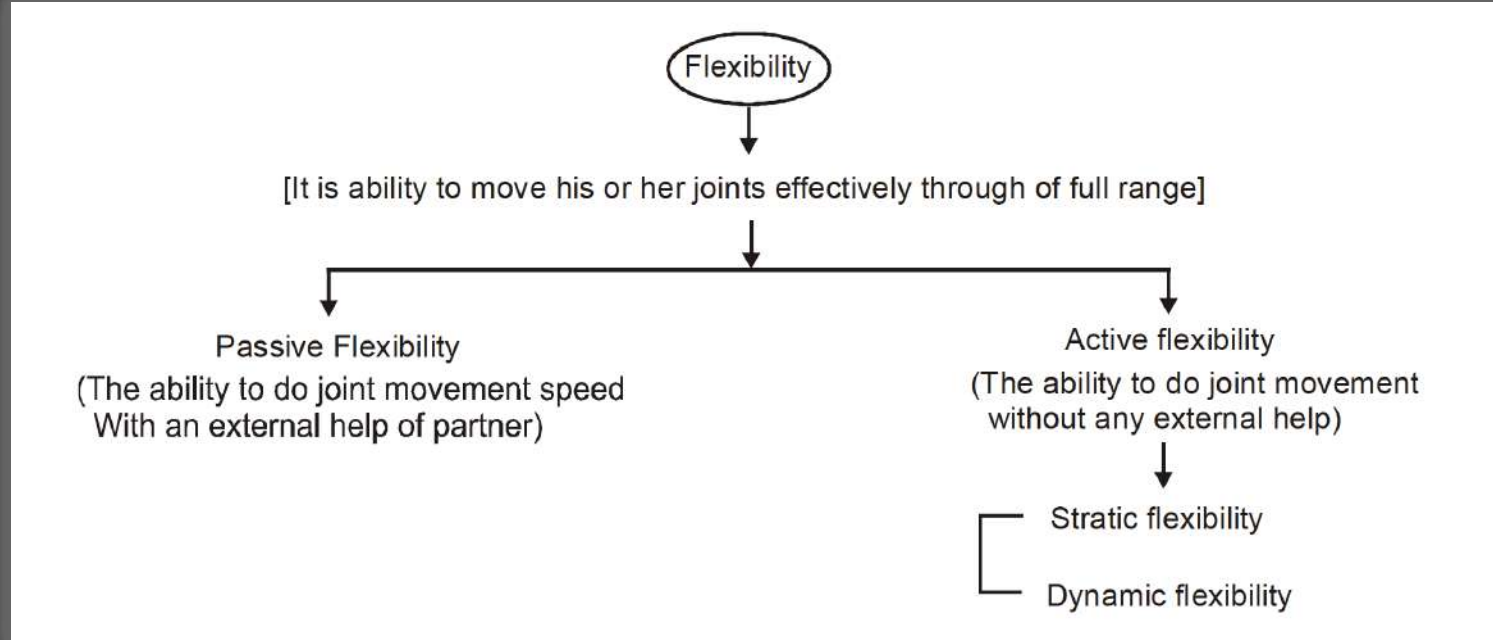
Sufficient intervals should be provided between the repetitions.



## 10.4 Types & Method to Develop – Flexibility and Coordinative Ability

### Flexibility :

Flexibility is the **range of movement of the joint** of a sports person.



## Methods to Develop Flexibility

```
graph TD; A[Methods to Develop Flexibility] --> B[Ballistic Method]; A --> C[Slow stretch & hold method]; A --> D[Post Iso metric Stretch Method];
```

Ballistic  
Method

Slow stretch &  
hold method

Post Iso metric  
Stretch Method

## Methods to develop Flexibility :

### 1. Slow Stretch and hold method :

We stretch our joint to maximum limit and hold it for a few seconds before returning to the initial Phase.

The holding period must be not more than 3 to 8 sec. The method is also use for improving passive flexibility



## Methods to develop Flexibility :

### 2. Ballistic Method -

In this method the stretching exercises are done in a swing, so this is called the ballistic method.

A proper warm - up should be done before these exercise.

Stretching of the muscle can be done in a rhythm.



## Post - Isometric Stretch Method -

PNF stretching is currently the fastest and most effective way known to increase static-passive flexibility.

PNF is an acronym for **Proprioceptive Neuromuscular Facilitation**. It is not really a type of stretching but is a technique of combining **passive stretching and isometric stretching** in order to achieve maximum static flexibility.



After assuming an initial passive stretch, the muscle being stretched is **isometrically contracted** for 7-15 seconds, after which the muscle is briefly relaxed for 2-3 seconds, and then immediately subjected to a passive stretch which **stretches the muscle even further than the initial passive stretch**.

This final passive stretch is held for 10-15 seconds. The muscle is then relaxed for 20 seconds before performing another PNF technique.



# Coordinative Abilities :

## Co-ordinative Abilities

Co-ordinative Abilities

```
graph TD; A([Co-ordinative Abilities]) --> B["[Those abilities of an individual which enable the individual to do various related activities properly as well as efficiently.]"]; B --> C[Orientation ability]; B --> D[Coupling ability]; B --> E[Reaction ability]; B --> F[Balance ability]; B --> G[Rhythmic ability]; B --> H[Adaptation ability]; B --> I[Differentiation ability];
```

[Those abilities of an individual which enable the individual to do various related activities properly as well as efficiently.]

Orientation  
ability

Coupling  
ability

Reaction  
ability

Balance  
ability

Rhythmic  
ability

Adaptation  
ability

Differentiation  
ability

## Co-ordinative abilities :

Coordinative abilities mainly depend on the **central nervous system**.

The coordinative abilities are those abilities of an individual which enable the individual to do various related activities properly as well as efficiently.

Our accuracy, rhythm, flow and constancy depend on our coordinative abilities.



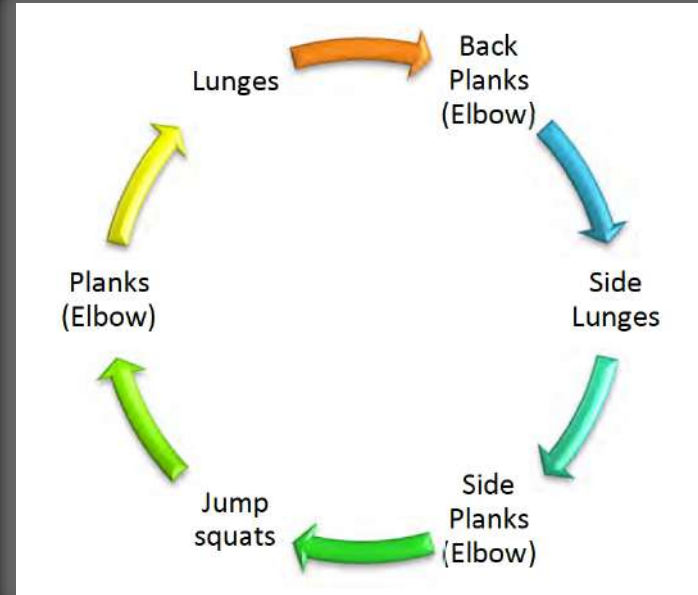
## 10.5 Circuit Training Method :

Circuit training method was designed by **Adams and Morgan** in the year **1957**.

It is a **scientific arrangement** of exercises performed systematically and repeatedly in such a way that it **looks like a circuit**. Therefore, it is called circuit training.

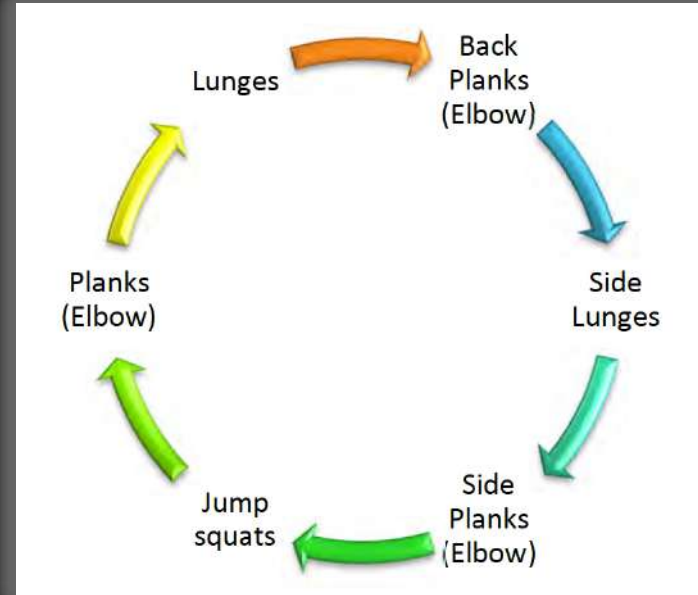
It is a method of training that involves multiple stations that make a complete circuit (or circle).

It usually consists of **10-12 training stations** according to the need and intensity required for the training programme. Recovery period between the stations is controlled.



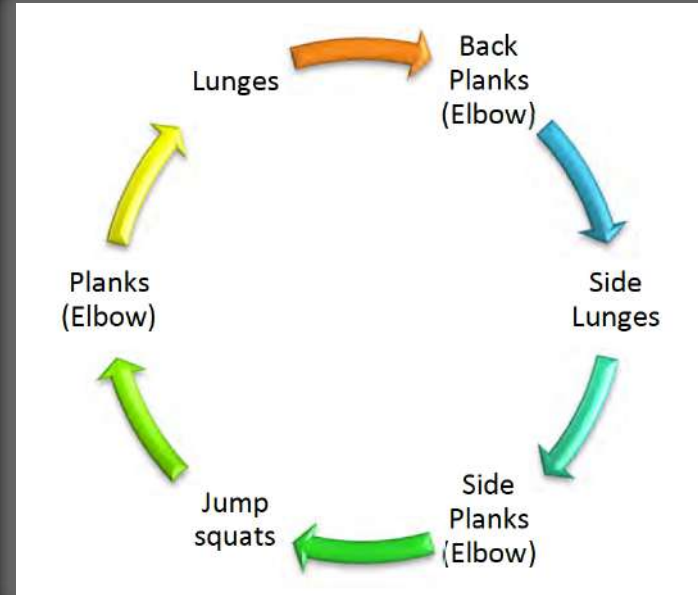
## Main Characteristics of a Circuit :

1. Exercises in a circuit are **simple** to learn and execute.
2. Exercises are usually performed with **medium resistance** or medium weight.
3. Frequency or number of repetitions vary as per the need of the programme.
4. Aim of circuit training is to **develop endurance and strength**.
5. It takes into account **exercises of the whole body**.



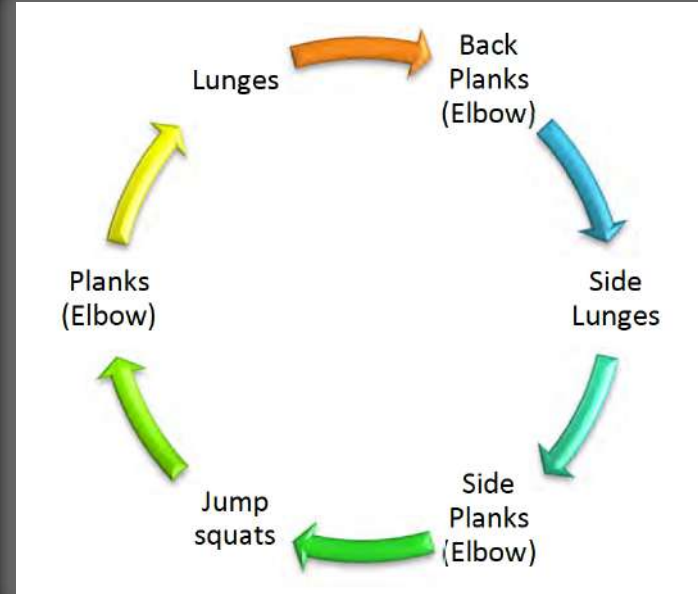
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## Importance of Circuit Training :

1. It improves **cardiovascular fitness** of a sportsperson.
2. It improves **general fitness** by incorporating exercise that involves the whole body.
3. It enhances **VO2 max** (maximal oxygen consumption) which means the body can take more oxygen to be utilized by muscles.
4. It further enhances **consumption of oxygen** by muscles.
5. It improves **muscle strength & muscular endurance**.



# Previous Year Questions

1. Fartlek training was developed in?  
[2020]

A. Sweden.

B. USA

C. India

D. UK

2. If muscle contract and changes its length to produce force, the contraction type is? [2020]

- A. Isotonic.
- B. Isometric
- C. Isokinetic
- D. None

1. What is circuit training. Explain its importance? (5 Mark)

[2020]

# CBSE Sample Paper Questions

# Questions in CBSE Sample Paper 2024

**Q6. What do you mean by iso and metric?**

- a) Iso means constant and metric means length.
- b) Iso means change and metric means size
- c) Iso means constant and metric means velocity
- d) Iso means size and metric means constant

# Questions in CBSE Sample Paper 2024

## Q21. Explain Isokinetic exercise with suitable examples

Ans. This method was introduced by **J.J. Perrine in 1968** and involves a particular type of muscle contraction called isokinetic contraction, generally used in sporting events like **rowing and swimming**. These exercises are performed on specially designed instruments. In isokinetic contraction, the muscles apply maximal force throughout the range of motion around the joint.

Whereas in isotonic contraction, the pressure is applied at a particular angle. The use of isokinetic contraction is minimal.

## Questions in CBSE Sample Paper 2023

Q5. Jumping on the spot is an example of \_\_\_\_\_

- a) Iso-metric
- b) Iso-tonic.
- c) Iso-kinetic
- d) Iso-kinesthetic

## Questions in CBSE Sample Paper 2023

Q6. Take-off in Long jump is an example of \_\_\_\_\_ strength.

- a) Explosive strength.
- b) Maximum strength
- c) Strength endurance
- d) Static strength

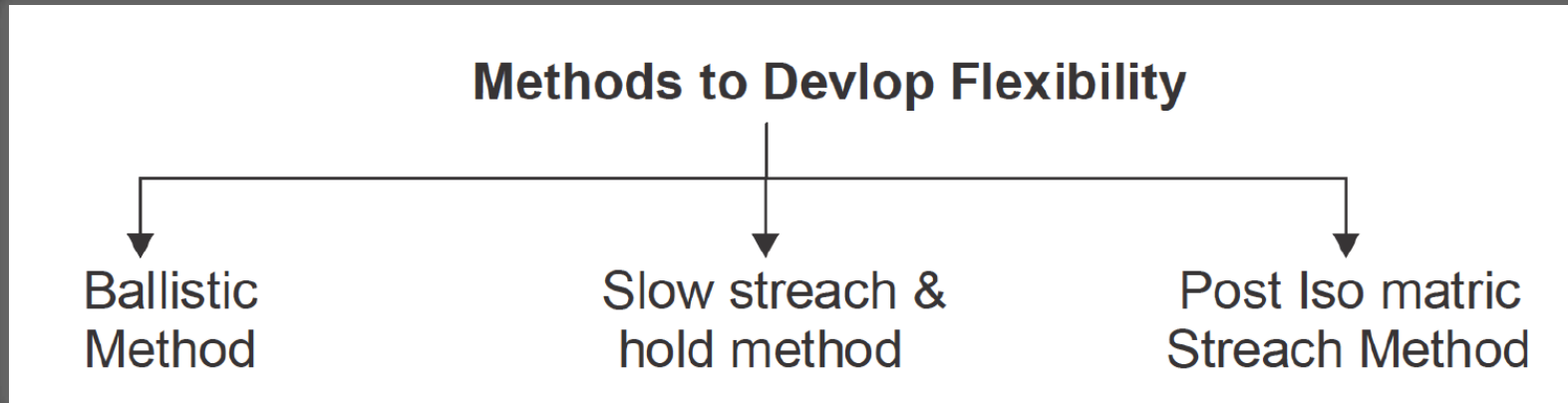
# Questions in CBSE Sample Paper 2023

**Q21. List down  
any four  
advantages of  
fartlek training  
method.**



# Questions in CBSE Sample Paper 2023

**Q36. Define flexibility along with its types. Explain any two methods used to develop flexibility.**



## Questions in CBSE Sample Paper 2021

**Q. Interval Training is used for developing**

- a. Flexibility
- b. Agility
- c. Endurance.
- d. Speed

Questions in CBSE Sample Paper 2021

**Q. Resistance ability against fatigue is called**

- a. Strength
- b. Speed
- c. Endurance.
- d. Agility

Questions in CBSE Sample Paper 2021

**Q 23. Explain any three types of coordinative abilities.**

16. \_\_\_\_\_ is **not** the training method to develop Endurance.

(a) Fartlek method

(c) Continuous method

(b) Isometric Method

(d) Interval method

Ans. (b) Isometric Method

**Explanation:**

The Isometric Method is not used for developing endurance; instead, it's primarily used for strengthening specific muscle groups.

17. \_\_\_\_\_ is the process of enhancing the skills, capabilities, and knowledge of an individual for doing a particular job.

(a) Training

(b) Planning

(c) Organising

(d) Staffing

Ans. (a) Training

**Explanation:**

Sports training is a special process of preparation of sports persons based on scientific principles aimed at improving and maintaining higher performance capacity in different sports activities.

MCQs

**Q.1 The method in which there will be no change in the length of the muscle is known as**

- (a) Isometric method.
- (b) Isotonic method
- (c) Isokinetic method
- (d) Fartlek method



Q.2 Name of the ability which help to over come the resistance with speed is known as

- (a) Maximum strength
- (b) Explosive strength.
- (c) strength endurance
- (d) static strength



**Q.3. Which is not the training method to develop Endurance.**

- (a) Fartlek method
- (b) Post isometric stretch Method.
- (c) Continuous method
- (d) Interval method



**Q.4. Speed play is another name of which method?**

- (a) Fartlek method.
- (b) Continuous method
- (c) Interval method
- (d) Isokinetic method



## Q.5. Which is not the type of speed ability

- (a) Reaction speed
- (b) Movement speed
- (c) Speed Endurance
- (d) Speed Play.

**Q.6. The ability which is helpful to Maintain max speed for long time.**

- (a) Reaction speed
- (b) Locomotor speed.
- (c) Speed Endurance
- (d) Movement speed



**Q.7. The ability which helps to the movement with greater range is known?**

- (a) Endurance
- (b) Strength
- (c) Flexibility.
- (d) Speed



**Q8. Which is not the method to improve flexibility?**

- (a) Ballistic method
- (b) Slow stretch and hold method
- (c) Post Isometric stretch method
- (d) Slow continuous method.

# Practice Question

**Q. Explain Endurance with its types and ways to develop it?**

# **Expected Questions of Unit - 10**

**Q. Explain Strength and ways to develop it?**