14

373en14

SPORTS TRAINING

Note

Read the conversation between the student and teacher

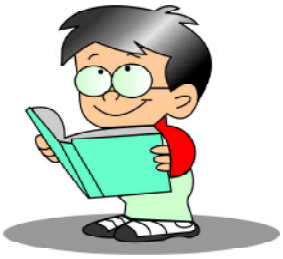
Student : Is there any need for specific training for performance in sports?

Teacher : Certainly yes.

Student : What type of specific training is required?

Teacher : Sports training is systematic training to improve the performance in sports competitions. It includes skill training, physiological conditioning. In this lesson, we will learn about the sports training, fitness and its components and difference between aerobic and anaerobic exercises.

OBJECTIVES

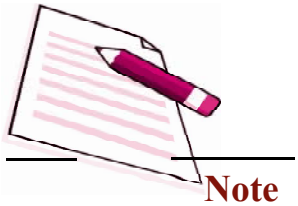


After studying this lesson you will be able to:

- explain the principles, meaning and aims of sports training;
- explain the fitness and its components and
- describe about aerobic and anaerobic exercises and the difference between them.

14.1 MEANING OF SPORTS TRAINING

Sports training is a process of systematic preparation of sportspersons or team to perform well in a sports competition. In this sportsperson or team gets systematic training which is based on scientific principles. The goal of sports training is to train a sportsperson or team to achieve their full potential and perform optimally in a particular competition. Sports training includes- physiological conditioning, psychological training, skill training, and training of game plan or strategy.


Note

14.1.1 Principles of Sports Training

Sports training principles are the guiding forces for coaches or trainer to plan effectively training schedule for sportspersons or team. For an effective use of training principles, it should be taken into consideration for individualized training. Following are the principles of the sports training.

- **Principle of Balance:** This principle broadly focuses on right proportion of each and every performance determinant factor such as physical capacities, psychological makeup, and skill level.
- **Principle of Individualization:** Every human being is different from each-other, so this principle deals with the individual differences. Each training schedule should be designed considering the individual differences.
- **Principle of Overload:** No athlete should be given load beyond his/her abilities.
- **Principle of Recovery:** Ratio of rest and recovery between exercises and time between workouts must be taken care of.
- **Principle of Reversibility:** This principle guides about detraining once athlete discontinues training.
- **Principle of Specificity:** Each sport demands specific requirements and this principle guides regarding game specific requirement.
- **Principle of Transfer:** This principle deals with how the workout performed during the training session can contribute to competitive performance.
- **Principle of Variation:** For obtaining better results of sports training variations in exercises, resting time, and the intensity should be considered.

14.1.2 Aim of Sports Training

The aim of sports training is to train an individual or team to achieve top form and perform better and in a selected sport competition. Different factors are responsible for achieving top form of maximum efficiency. Sports training focuses on reaching top form or maximum efficiency.

INTEXT QUESTIONS 14.1

1) Explain the term 'sports'.

.....

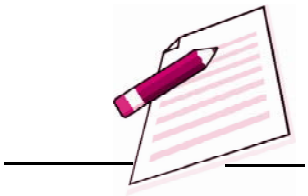


2) Explain the principle of individualization.

.....

DO YOU KNOW?

Sports performances are affected by the time of day which is known as circadian rhythm.



Note

In the above section you have learnt about the sports training, its principles and its aims. Now we are going to discuss about which physical fitness components are getting trained in sports training.

14.2 PHYSICAL FITNESS AND IT'S COMPONENTS

The ability to perform day to day work without undue fatigue may be termed as physical fitness. It encompasses a wide range of abilities so that one can carry out daily routine with ease and overcome the physical challenges during sports competitions.

14.2.1 Physical Fitness Components

These are basic components which make athlete fit for sports. Let us learn more about components of physical fitness.

Strength: It is an ability of a muscle to overcome resistance. Strength is mainly of three types.

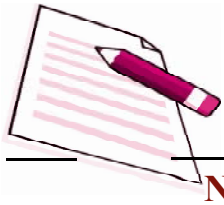
Maximum Strength: It is an ability of a muscle to overcome maximum resistance.

Strength Endurance: It is an ability of the muscle to carry out resistance for longer duration of time.

Explosive Strength: It is an ability of the muscle to overcome resistance in possible time.

Endurance: It is the ability to perform activity with desired quantity and quality under condition of fatigue. Like continuous running for 15 minutes and above is best example of endurance. Endurance may be divided into cardiovascular endurance and muscular endurance.

Speed: It is the ability to cover a distance or perform any action in minimum possible time. Speed may be divided into five sub components which are as follows:


Note

a) Reaction Ability,
b) Movement Speed,
c) Acceleration Ability,
d) Locomotor Ability, and
e) Speed Endurance.

Flexibility: It is the ability of joints to move full range of motion (ROM). Flexibility is also two types. One is Active Flexibility and the second is Passive Flexibility.

Coordinative Abilities: Ability to quickly and respectfully doing a group of movements with better quality and effect. There are following coordinative abilities:

a) Orientation Ability
b) Coupling Ability
c) Balance Ability
d) Differentiation Ability
e) Rhythmic Ability, and
f) Reaction Ability.

INTEXT QUESTIONS 14.2

Fill in the blanks with appropriate word.

1) Flexibility exercises improve ..... at a joint.
2) Strength exercises include ..... exercises.
3) Squats are used for strengthening .....

ACTIVITY 14.1

Prepare a chart by collecting pictures of 'upper body strength exercises'.

DO YOU KNOW?

To increase overall physical capabilities (endurance), a person should be given certain amount of stress (overload).



In the above section you have learnt about the components of physical fitness. Now in the next section you will learn the exercises you can use to train above mentioned components.

14.3 AEROBIC AND ANAEROBIC EXERCISES

It is often said that exercises cannot be performed without oxygen. To some extent it is true. When exercises are performed for the longer period of time, constant supply of oxygen is required. Whereas certain exercises are performed as ballistics movement or separated in shorter span of time. Such activities do not require constant supply of oxygen. Basic difference in aerobic and anaerobic can be understood by discussing further about aerobic and anaerobic exercises.

Note

Aerobic Exercise

Aerobic exercises are the exercises which are performed with the oxygen and glucose and fat used as fuel. Aerobic activities can be sustained for a longer period of time. Some of aerobic activities are slow and continuous running or jogging.

Anaerobic Exercise

Anaerobic exercises are performed where the constant supply of oxygen is not present. Examples of anaerobic exercises are short distance running like 100 meters. While performing anaerobic exercise our body generates lactic acid which causes fatigue at sustained levels term.

Differences in Aerobic and Anaerobic Exercises

Aerobic exercise	Anaerobic exercise
Involves oxygen in energy production	Doesn't involve oxygen in energy production
May last longer than 2 minutes	Lasts from a few seconds to 2 minutes, then a pause is required
Increases endurance, improves cardiovascular system	Increases strength, improves bone density, builds up muscles

14.3.2 Process of Determining Aerobic or Anaerobic Fitness

For determining the kind of exercise you are performing, you can use your maximum heart rate (MHR) to calculate which exercise you are performing.

Note

To calculate Maximum Heart Rate (MHR):

220 - age = MHR

Figure: Showing different heart rate zones

DO YOU KNOW?

One needs to exercise at 55-85% of your max heart rate (max heart rate per individual is 220-your age) in order to improve one's aerobic fitness.

ACTIVITY 14.2

Prepare chart by collecting pictures of five Aerobic and five Anaerobic exercises.

INTEXT QUESTIONS 14.3

Complete the sentences in a meaningful way

1) Aerobic exercises are performed with .....

2) Anaerobic exercise can not be performed without .....

3) Maximum heart rate is calculated by .....

WHAT YOU HAVE LEARNT

- Sports training is a process of systematically preparing of sportsperson or team to perform well in a sports competition.

Note

- Sports training principles are the guiding forces for coaches or trainers to plan effectively training schedule for sportspersons or team. The principles of the sports training are- Principle of Balance, Principle of Individualization: Principle of Overload, Principle of Recovery, Principle of Reversibility, Principle of Specificity, Principle of Transfer, and Principle of Variation.
- The aim of sports training is to train an individual or team to achieve top form and perform better in a selected sport competition.
- The ability to perform day to day work without undue fatigue may be termed as physical fitness.
- Aerobic exercises are performed for the longer duration of time and with the constant supply of oxygen.
- Anaerobic exercises are performed for shorter duration and in the absence of oxygen for very short period of time.

TERMINAL QUESTIONS

1) Explain the meaning of sport training and list its principles.

2) Explain the components of physical fitness.

3) Differentiate between aerobic and anaerobic exercises.

4) Explain load and recovery principle in sports.

ANSWER TO INTEXT QUESTIONS

14.1

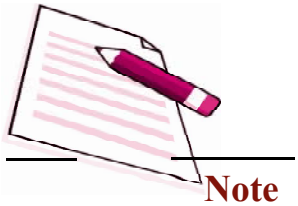
1) Sport is a vigorous competitive activity where a player finds his full of satisfaction and achievement.

2) Individualization Principle concerns adjustments in training based on differences between individual athletes.

14.2

1) Flexibility exercises improve range of motion at a joint.

2) Strength exercises include weight training exercises.



3) Squats are used for strengthening thigh muscles.

14.3

1) Aerobic exercise could be performed in presence of Oxygen.
2) Anaerobic exercise could not be performed without Oxygen.
3) Maximum heart rate is calculated by 220-age.