CHAPTER-7
Physiology & Injuries in Sports

SUB-TOPIC- INJURIES IN SPORTS

Classification of sports Injuries

Classification of sports Injuries
- External Injuries
  - Soft tissue injuries
    - Skin Injuries
      1. Abrasion
      2. Contusion
      3. Laceration
      4. Incision
  - Internal Injuries
    - Soft tissues Injury
      a. sprain
      b. strain
    - Hard tissues Injury
      - Joints Injuries
        - Dislocation
          1. Shoulder joint
          2. hip joint
          3. Wrist joint
          4. Lower Jaw Dislocation
      - Bone Injuries
        - Fracture
          1. Green stick
          2. Comminuted
          3. Impacted
          4. Transverse
          5. Oblique
          6. Stress
      - Over use Injuries
        1. Tennis elbow
        2. Tendinitis
        3. Shin splints
        4. Shoulder Impingement
Prevention from Sports Injuries:

1. Warming up, stretching and cooling down.
2. Undertaking training prior to competition to ensure readiness to play.
3. Including appropriate speed work in training programme so muscles are capable of sustaining high acceleration forces.
4. Including appropriate stretching and strengthening exercises in weekly training programs.
5. Gradually increasing the intensity and duration of training.
6. Maintaining high levels of cardiovascular fitness and muscle endurance to prevent fatigue.
7. Allowing adequate recovery time between workouts or training sessions.
8. Wearing protective equipments, such as shin guards. Mouth guards and helmets.
9. Pre participation medical check up.
10. Ensuring the playing surface and the sporting environment are safe and clear from any potentially dangerous objects.
11. Wearing appropriate footwear that is well fitted and provides adequate support and contraction for the playing surface.
12. Drinking water before, during and after play.
13. Avoiding activities that cause pain.
15. Adequate & effectively maintained facilities.
16. Psychological & environmental condition of players.
17. Balanced diet.
Management of Injuries

Soft tissues injuries

1. Price Treatment
   – P-Protect the wound
   – R-Rest-No more movement
   – I-Ice-To stop the bleeding
   – C-Compression - To stop bleeding
   – E-Elevation - Heart level

2. MICE Treatment
   M – Mobilization
   I – ICE
   C – Compression
   E – Elevation

3. REST Therapy
   R – Rest
   E – Elevate
   S – Support
   T – Tight

Management of joint Injuries

(i) Rest Therpy  (ii) Price Therpy

Management of Bone Injuries:

(i) Price Therapy

Rehabilitation

(i) Normal Movement
   (a) Treatment
   (b) Physiotherapy
   (c) Massage
(ii) Training and Practice
(a) strength
(b) endurance
(c) flexibility
(d) speed
(e) coordination & Agility
(iii) Specific fitness
(iv) Test and measurement

Multiple choice question (1 Marks)
Q.1. Matching the following
1. Abrasion  A. Joint Injuries
2. Green stick fractures  B. Soft tissue injuries
3. Shoulder Dislocation  C. Cause of sports injuries
4. Lack of fitness  D. Bone injuries
(a) 1D, 2A, 3C, 4B  (b) 1B, 2A, 3C, 4D
(c) 1B, 2D, 3A, 4C  (d) 1A, 2D, 3B, 4C

Q.2. Not a Causes of sports injuries
(a) Inadequate warming up
(b) Lack of sports Facilities
(c) Practice During Fatigue
(d) Proper knowledge of sports skills.

Q.3. You should use Ice on a soft tissue injury after.
(a) **5 minutes**  (b) 10 minutes
(c) 20 minutes  (d) 15 minutes
Injuries in Sports

Q.4. An ankle sprain is an example of which type of injury.

(a) Skin    (b) Hard tissue
(c) **Soft tissue**    (d) Bone

Q.5. Which of the following is not a type of fracture.

(a) Stress fracture    (b) Oblique
(c) **Contusion**    (d) Communated

**Short Question (3 Marks)**

Q.1. Define soft tissue injuries in the sports? Write its preventive measures?

Ans. Soft tissue refers to tissues that connect, support or surround other structures and organs of the body the muscles, tendons, ligaments, fascial, nerves, fibrous tissue, blood vessels, etc. Soft tissue injuries involve injuries to muscles, ligaments and tendons in the body.

Preventive measures of soft tissue injuries:

1. Proper warming up
2. Proper conditioning of body
3. Scientific equipments & facilities
4. Clean & plain surface of play grounds
5. Knowledge rules & regulation of sports events.
6. Actively & alterneness participation during the sports training & competition.
7. Fatigue, sickness & injuries’s condition to avoid the participation in the sports training.

Q.2. What do you mean by dislocation in joints? Explain
Injuries in Sports

any two dislocation in the body.

Ans. **Dislocation**

A dislocation is a separation of two bones where they meet at a joint. Joints are areas where two bones come together.

1. **Dislocation of Lower Jaw**: Generally, it occurs when the chin strikes to any other object. It may also occur if mouth is opened excessively.

2. **Dislocation of Shoulder Joint**: Dislocation of shoulder joint may occur due to sudden jerk or a fall on hard surface. The end of the humerus comes out from the socket.

**Disclocation of Right Shoulder**

Q.3 Write the signs & symptoms and treatment of dislocation.

OR

Discuss the preventive measures of dislocation.

**Ans. Signs and symptoms**:

A dislocated joint may be
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Accompanied by numbness or tingling at the joint or beyond it.

Intensely painful, especially if you try to use the joint or put weight on it.

Limited in movement.

Swollen or bruised.

Visibly out of place, discoloured, or mis-happen.

Treatment of Dislocation- First-aid

3. Rest of injured part  P – Protection
4. Elevate if possible  R – Rest
5. Support the part I – Ice
6. Tie for support C – Compressing wound
(Rest Therapy) E – Elevate if feel comfort
(Price therapy)

Prevention of Dislocation of Joints:

1. Adequate warm-up should be performed prior to any physical activity.
2. Proper conditioning should be done in preparatory period.
3. Stretching exercises should be included in warm-up.
4. Players should be careful and alert during practice and competition.
5. Protective equipments should be used as per the requirement of the games/sports.
6. Practice should be discontinued during fatigue.
7. Players should have good anticipation and
Injuries in Sports

concentration power.

8. Always obey the rules and regulations.

9. Proper cooling down after the physical activities.

Q. Enumerate the types of fractures? Write briefly about any three type of fracture?

Ans. Types of Bone Fractures

**Types of Bone Fractures**

- **Greenstick fracture**: An incomplete fracture in which a bone bends and cracks. This type of fracture usually occurs in children because their bone are soft and flexible.

- **Transverse fracture**: A fracture at a right angle to the bones axis or a straight break right across a bone.

- **Oblique fracture**: A fracture is a stanted fracture that occurs when a force is applied diagonally an angle to
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- a bone's long axis.
- Impacted fracture: It is loss of continuity in the structure of bones.
- Stress fractures: It is a crack in bone due to high impact physical activity.
- Comminuted Fracture: A fracture in which the bone fragments.

Q. Discuss the causes of fracture?

Ans. Fracture usually occurs due to a high impact on the bone. It can be caused by overuse.

The most common causes of fracture are:
7. In such sports events where there is a high impact.
8. Traumatic, forceful and unnatural movements of the body.
9. Prolong long distance walking & running
10. Sudden falls on hard surface
11. Direct strike or hit with any solid sports equipment
12. Osteoporosis

Long Answer type Question (5 Marks each)

Q. How you will prevent injuries in sports? Ans.

Prevention From Sports Injuries

Competitive athletes may have difficulty avoiding sports injuries due to the intensity and frequency of their training and competition. However, it is possible to prevent most of the sports injuries by undertaking following preventive measures.

1. **Proper warming up**: Before the start of any practice
Injuries in Sports

of competition proper warming-up is essential. Sports injuries can be prevented to a greater extent. Proper warming up helps our muscles to get ready for the work.

2. **Proper conditioning** : Many injuries occur due to weakness of muscles which are not ready to meet the demand of sports. So, for getting proper compatibility is a must for muscular power training load and circumference training weight training circuit training methods which develops Neuro-muscular co-ordination among muscles and prevents us from injuries.

3. **Balanced diet** : Balanced diet helps us (to some extent) prevent from injuries. For example, intake of calcium, phosphorous and vitamin D in lots of quantity to meet demands of muscles and organs to practice of activities.

4. **Proper knowledge of sports skills**: Proper knowledge of sports skills is necessary for the prevention of injuries. Players are fully skilled or sound knowledge of sports skills can prevent injuries.

5. **Use of protective equipment** : The use of protective equipment is necessary for the prevention of sports injuries. So always, wear protective equipment while playign sports. They provide security to the bodies. For their better results, always try to put on high quality protective equipments.

6. **Proper sports facilities** : Sports facilities and sports injuries have relation between them. In fact, sports injuries can be prevented if there are high-quality protection sports equipment and proper play grounds are available for practice and competition.

7. **Unbiased officiating** : If the team officials take
Injuries in Sports

decisions without any bias, injuries can be minimised. If the officials or referees practise partiality, these may be more changes of indiscipline among players which leads to injuries. So unbiased officiating can prevent injuries in sports fields.

8. **Not to do overtraining**: Physical training should be gradually increased to avoid injury. Exercise should be according to the current status of physical fitness level of the athletes to increase the strength and quality of muscles. Avoid training which muscle is fatigued or weakened.

9. **Use of proper technique**: Using proper techniques of playing different sports prevents us from severe sports injuries, such as tendonitis and stress fracture.

10. **Obeying the sports rules**: Obeying the sports rules is also helpful in preventing sports injuries to a greater extent.

11. **Proper cooling down**: After regular practice or competition, cooling down is equally important as warming-up before practice or competition. Cooling down should be done properly.

**OR**

**Tips of Preventing of Sports Injuries**

1. Avoid training when you are tired.
2. Increase your consumption of carbohydrate during periods of heavy training.
3. Increase in training should be matched with increase in resting.
4. Any increase in training load should be preceded by
Injuries in Sports

5. Treat even seemingly minor injuries very carefully to prevent them from becoming a big problem.

6. If you experience pain during training, STOP your training session immediately.

7. Never train hard if you are stiff from the previous effort.

8. Pay attention to hydration and nutrition.

9. Use appropriate training surfaces.

10. Training and competition areas should be clear from hazards.

11. Equipments should be appropriate and safe to use.

12. Introduce new activities very gradually.

13. Allow a lot of time for warming-up and cooling down.

14. Check overtraining and competition courses before participation.

15. Train on different surfaces, with the right footwear.

16. Shower and change your dress immediately after cool down to maintain hygiene.

17. Aim for maximum comfort when travelling.

18. Stay away from infectious areas when training or competing very hard.

Q. Classified the soft tissue injuries cause & preventive measures in detail?

Ans. Soft tissue injuries mean injuries of muscles, tendons, ligaments, fascia, nerve, fibrous tissues blood vessels, synovial membranes. Basically soft tissues refers to tissues that
Injuries in Sports

connect, support or surround other structure & organs of the body.

Causes of soft tissue injuries
1. Over use
2. Falls
3. Stops & twists
4. Improper equipments
5. New & Increased activities
6. Fatigue
7. Poor warning up
8. Impact
9. Unilateral movement
10. Faulty techniques & posture

Preventive measures of soft tissue injuries.
1. Proper warming up
2. Appropriate condition of body.
3. Sound technical knowledge of skills and equipments.
4. Healthy diet.
5. Efficient use of techniques
6. Use of proper protective gears
7. No over training & over use of body
8. Obey safety rules
9. Fair and unbiased officiating
10. Proper cooling down.
Injuries in Sports

Practice question

Short question (3 Marks)

Q. Describe three causes for sports injuries?
Q. How can sports injuries be prevented?
Q. What is the difference bone and joint injury? Explain with examples.
Q. Explain three sports injuries.

Long question (5 Marks)

Q.1. Explain preventive measures that can be take in against sports injuries.

First aid Aim & objectives

First aid: “It is care that is give to an injured or sick person prior to treatment by medically trained personnel.”

OR

“First aid is a combination of some simple procedures and the application of common sense to relief an injured person.”

OR

It is an immediate & temporary care give to an injured or an accident or sudden illness before the services of a physician as obtained.

Aim of first aid:

The Aim of first aid to save the life of an injured & ill person.

Objectives of firstaid

1. To preserve life
Injuries in Sports

2. To alleviate pain & suffering
3. To prevent the condition from worsening
4. To promote recovery.
5. To procure Early medical Aid.

Multiple choice questions (1 Marks)

Q. In what situations first aid is given?
   (a) In case of chronic disease.
   (b) In case of sudden illness or injury
   (c) Along with doctor’s treatment
   (d) Old wounds

Q. Which of the following comes under first Aid.
   (e) To go for doctor’s consultation.
   (f) Preventing blood flow from the wounds
   (g) Immunization to prevent diseases
   (h) Surgery

Q. Explain the objectives of first aids?
   Ans. It is an immediate & temporary care given to a victim of an accident or sudden illness before the services of a physician is obtained.

   Objectives of first aid
   1. To preserve life
   2. To alleviate pain & suffering
   3. To prevent the condition from worsening
   4. To promote recovery
   5. To procure early medical Aid
Injuries in Sports

Practice question

Q. Explain the objectives of first Aid?

Q. When is first Aid given? Explain the objectives of first Aid?

Q. When is first Aid important? Explain the objectives of first Aid in detail?

Practice Question

Multiple choice question (1 Mark)

Q. Matching the following

1. Components of physical fitness
   A. Decrease in bone density
2. Effect of exercises on cardiorespiratory system
   B. Flexibility
3. Effect of exercise on muscular system
   C. Increase in endurance
4. Physiological change due to old age
   D. Improvement in body shape

(a) 1B, 2C, 3B, 4A  (b) 1C, 2D, 3A, 4B
(c) 1D, 2C, 3B, 4A  (d) 1A, 2C, 3B, 4D

Q. Matching the following

5. Security of life
   A. Injury of hard tissue
6. follow rules of sports
   B. Injury of soft tissue
7. strain
   C. First Aid
8. fracture
   D. Prevention of sports injury

(a) 1C, 2D, 3A, 4B  (b) 1C, 2D, 3B, 4A
(c) 1A, 2B, 3C, 4D  (d) 1D, 2C, 3B, 4A

Q. Classify sports injuries and write down the aim of first Aid?