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Management of Injuries during Outdoor Sports



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**T.NAGA RAVI KIRAN*, E.SAGAR REDDY,
D.VENKAT NAGENDRA BABU,
J.N.SURESHKUMAR**

*Department of Pharmaceutical Chemistry,
Narasaraopeta Institute of Pharmaceutical Sciences,
Yellamanda, Narasaraopeta. Guntur (Dt), Andhra
Pradesh.*

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ABSTRACT

Sports participation during childhood, adolescence and adulthood years is of pivotal importance in physical endurance and stamina. The physical, mental, and emotional development associated with athletic endeavors can play a great dividend in adulthood. Whether it is a team sport demanding the combined effort of various personalities and skills sets or the mental toughness required of individual competition, character development often benefits. Unfortunately, on the flip side of many athletic endeavors is the risk of injury, which can bring long-term consequences. Therefore, balancing the benefits and risks is often the best course to making reasonable decisions about athletic participation. The objective of this review is to identify the available research regarding the risk factors and commonly occurring injuries in various sports and their prevention and management.



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INTRODUCTION

Sport refers to an activity involving physical activity and skill. Here, two or more parties compete against each other. Sports are an integral part of human life and there is great importance of sports in all spheres of life. Furthermore, Sports help build the character and personality of a person. It certainly is an excellent tool to keep the body physically fit. Most noteworthy, the benefits of Sports are so many that books can be written. Sports have a massive positive effect on both the mind and body.

Sport has played an important role in our lives for many centuries. Millions of people all over the world are fond of sports and games. Sport keeps us fit, makes us healthy, more organized, better disciplined. It gives us a lot of pleasure, makes us stronger, and prolongs our life. It unites people of different classes and nationalities.

It's no secret that training and competing can take a toll on an athlete's body. Movements like running, swimming, jumping, tackling, kicking and pivoting, done on a regular basis, can lead to wear and tear on one's muscles, joints and bones. This holds especially true if proper technique is not adhered to while training. Each of our Sports Rehabilitation Center staff members is highly-qualified to treat a wide range of sports injuries in our patients. However, we feel it just as important for athletes to have their own basic understanding of injury prevention as well as the types of conditions they should be on the lookout for.

Sports offer many benefits to mankind which include Physical, Psychological and Social benefits which are stated below (Fig.1).

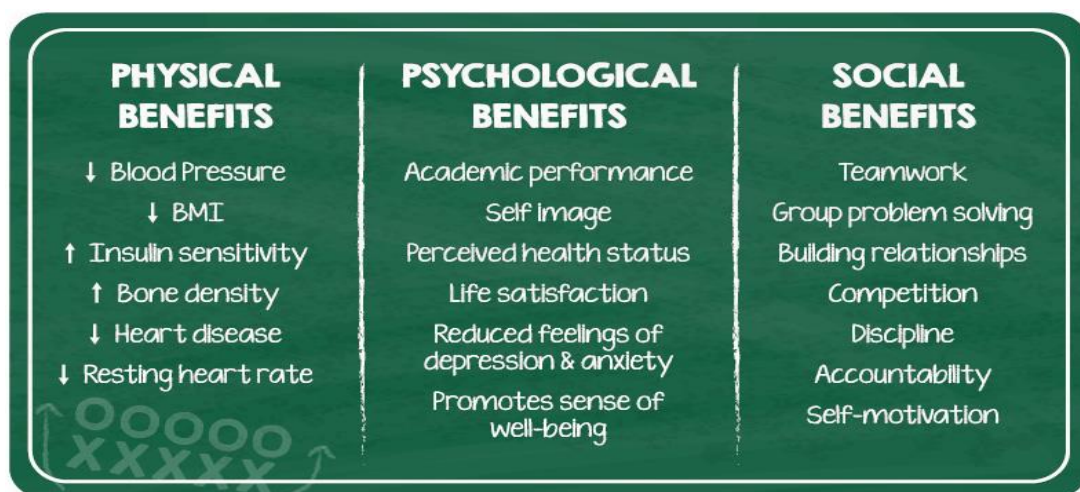


Figure No.1: Benefits with sports

INJURIES AT SPORTS

Different sports produce different injuries and complications. The most common types of sports injuries include:

- **Sprains.** Overstretching or tearing the ligaments results in a sprain. Ligaments are pieces of tissue that connect two bones to one another in a joint.
- **Strains.** Overstretching or tearing muscles or tendons results in a sprain. Tendons are thick, fibrous cords of tissue that connect bone to muscle. Strains are commonly mistaken for sprains. Here's how tell them apart.
- **Knee injuries.** Any injury that interferes with how the knee joint moves could be a sports injury. It could range from overstretch to a tear in the muscles or tissues in the knee.
- **Swollen muscles.** Swelling is a natural reaction to an injury. Swollen muscles may also be painful and weak.
- **Achilles tendon ruptures.** The Achilles tendon is a thin, powerful tendon at the back of your ankle. During sports, this tendon can break or rupture. When it does, you may experience sudden, severe pain and difficulty walking.
- **Fractures.** Bone fractures are also known as broken bones.
- **Dislocations.** Sports injuries may dislocate a bone in your body. When that happens, a bone is forced out of its socket. This can be painful and lead to swelling and weakness.
- **Rotator cuff injury.** Four pieces of muscle work together to form the rotator cuff. The rotator cuff keeps your shoulder moving in all directions. A tear in any of these muscles can weaken the rotator cuff.

PROBABILITY OF INJURIES DURING SPORTS²

In the U.S., about 30 million children and teens participate in some form of organized sports, and more than 3.5 million injuries each year, which cause some loss of time of participation, are experienced by the participants. Almost one-third of all injuries incurred in childhood are sports-related injuries. By far, the most common injuries are sprains and strains.

Obviously, some sports are more dangerous than others. For example, contact sports such as football can be expected to result in a higher number of injuries than a noncontact sport such as swimming. However, all types of sports have a potential for injury, whether from the trauma of contact with other players or from overuse or misuse of a body part.

The following statistics are from the National SAFE KIDS Campaign and the American Academy of Pediatrics:

Injury rates:

- More than 3.5 million children ages 14 and younger get hurt annually playing sports or participating in recreational activities.
- Although death from a sports injury is rare, the leading cause of death from a sports-related injury is a brain injury.
- Sports and recreational activities contribute to approximately 21 percent of all traumatic brain injuries among American children.
- Almost 50 percent of head injuries sustained in sports or recreational activities occur during bicycling, skateboarding, or skating incidents.
- More than 775,000 children, ages 14 and younger, are treated in hospital emergency rooms for sports-related injuries each year. Most of the injuries occurred as a result of falls, being struck by an object, collisions, and overexertion during unorganized or informal sports activities.

WHERE AND WHEN?

- Playground, sports, and bicycle-related injuries occur most often among children between ages 5 and 14 years old.
- The highest rates of injury occur in sports that involve contact and collisions.
- More severe injuries occur during individual sports and recreational activities.
- Most organized sports-related injuries (62 percent) occur during practice.

TYPES OF INJURIES AND ORIGINATIVE SPORTS ³

Consider these estimated injury statistics for 2009 from the Consumer Product Safety Commission:

- **Basketball.** More than 170,000 children ages 5 to 14 were treated in hospital emergency rooms for basketball-related injuries.
- **Baseball and softball.** Nearly 110,000 children ages 5 to 14 were treated in hospital emergency rooms for baseball-related injuries. Baseball also has the highest fatality rate among sports for children ages 5 to 14, with three to four children dying from baseball injuries each year.
- **Bicycling.** More than 200,000 children ages 5 to 14 were treated in hospital emergency rooms for bicycle-related injuries.
- **Football.** Almost 215,000 children ages 5 to 14 were treated in hospital emergency rooms for football-related injuries.
- **Ice hockey.** More than 20,000 children ages 5 to 14 were treated in hospital emergency rooms for ice hockey-related injuries.
- **In-line and roller skating.** More than 47,000 children ages 5 to 14 were treated in hospital emergency rooms for in-line skating-related injuries.
- **Skateboarding.** More than 66,000 children ages 5 to 14 were treated in hospital emergency rooms for skateboarding-related injuries.
- **Sledding or toboggan.** More than 16,000 children ages 5 to 14 were treated in hospital emergency rooms for sledding-related injuries.
- **Snow skiing or snowboarding.** More than 25,000 children ages 5 to 14 were treated in hospital emergency rooms for snowboarding and snow skiing-related injuries.
- **Soccer.** About 88,000 children ages 5 to 14 were treated in hospital emergency rooms for soccer-related injuries.
- **Trampolines.** About 65,000 children ages 14 and under were treated in hospital emergency rooms for trampoline-related injuries.

TYPES OF INJURIES BASED ON LOCATION OF INJURY⁴

1. Hip Flexor Strain

The hip flexors are muscles found on the upper-front side of your thigh. The main functions of the hip flexor muscles are to lift the knee toward your trunk, as well as assist moving your leg toward and away from the other leg. Hip flexors can be weak in individuals who sit a great deal at work or can become weak and stiff in individuals who have poor sitting posture. Sports injuries to this muscle group can be caused by sprinting, running inclines and activities with quick turns and sudden starts.

2. ACL Tear or Strain

The Anterior Cruciate Ligament (ACL), is one of the major stabilizing ligaments of the knee. The most common cause of sports injuries for an ACL strain is slowing down and trying to cut, pivot or change directions. Complaints of instability when walking or turning corners, as well as increased swelling in the knee would be common ACL tear symptoms.

3. Concussion

A concussion can be defined as injury to the brain, due a blow to the head where the brain is jarred or shaken. Concussions are serious injuries that should not be taken lightly. An athlete who experiences a concussion should seek out a certified athletic trainer or a physician with experience treating concussions.

4. Groin Pull

A groin pull is also called a groin strain. The groin muscles run from the upper-inner thigh to the inner thigh right above the knee. Groin muscles pull the legs together and are often injured with quick side-to-side movements and/or a lack of flexibility.

5. Shin Splints

Athletes with shin splints complain of pain in the lower leg bone or the tibia. Shin splints are most often found in athletes who are runners or participate in activities with a great deal of running, such as soccer. Athletes typically get shin splints diagnosed early in their season, as they increase activities or mileage too quickly.

6. Sciatica

Sciatica is back pain that also travels down the back of the leg or even to the feet. This radiating pain can additionally be associated with numbness, burning and tingling down the leg. Sciatica can be seen in athletes who are in a flexed forward posture, such as cyclists, or athletes.

7. Hamstring Strain

The hamstring muscle is located on the back of the thigh. Unfortunately, the hamstring muscles can be tight and are susceptible to a strain, which is also called a pulled muscle. Poor stretching techniques or lack of stretching can be the cause of a hamstring tear/strain. Often, an athlete with a hamstring tear will experience bruising in the back of the thigh or the knee.

8. Tennis or Golf Elbow

Tennis and golfer's elbow is usually seen with athletes performing a great deal of gripping activities. It can be labeled as an overuse sports injury, also known as medial or lateral epicondylitis. Due to the repetitive action, the tendons of the forearm can become inflamed and make any wrist or hand motions extremely painful. Often, athletes will complain of a lack of grip strength.

9. Shoulder Injury

Shoulder injuries cover a large number of sports injuries from dislocations, misalignment, strains on muscles and sprains of ligaments.

CAUSES OF INJURIES -

- Not warming up properly,
- Poor technique,
- Not using equipment correctly, or
- Not taking the proper safety precautions for your sport.

RISK OF GETTING A SPORTS INJURY -

Competitive athletes, such as sprinters, long-distance runners, gymnasts and rugby players, have a high risk of injury due to the intense nature of their training and the overuse of specific muscle groups.

Children are also at risk of sports injuries because they are still developing physically. For example, the female shape changes significantly during puberty (usually between ages 10 and 16). As the hips widen, exercise can put pressure on different parts of the legs and feet, which can sometimes lead to injury.

NEED FOR FIRST-AID KIT⁵- A first-aid kit is a necessity to help you respond effectively to common injuries and emergencies while coaching, playing. In general, they contain CPR mask, bandages, Disposable instant cold packs, roll gauze, sterile gauze pads, antiseptic solutions, antibiotic ointments, cotton tipped applicators, saline water, several pain killers, and sprays and muscle relaxants.

IN-SITU FIRST AID -

The primary goal of sports injury first aid is to stop the activity and prevent further injury or damage.

If you get injured while playing sports or exercising, here's what to do right away. These injury treatment tips will keep your pain and injury from getting worse and may help you heal more quickly.

These are the few tips which will help you get out of unanticipated situations.

1. If You Have Pain, Stop Exercise Immediately.
2. Reduce Swelling with Ice and Compression.
3. Ice the Right Way.
4. Medicate When Appropriate.

TRAGIC DEATHS IN SPORTS

1. Phillip Hughes

The cricket world received a terrible jolt when Phillip Hughes died at the age of 25 after being struck by a bouncer on the side of his head, below the helmet.

2. Antonio Puerto

Spain international Puerto, 22, collapsed while playing for Seville in a La Liga match against Getafe and died three days later from multiple organ failure stemming from prolonged cardiac arrest.

3. Ray Chapman

American baseball player Ray Chapman played as a shortstop for Cleveland Indians throughout his entire career. He is the only Major League Baseball player to face death from an injury during game play.

4. Steve McElveen

The University of Dayton redshirt freshman center died May 12, 2016 at age 20 after he collapsed at his family's home. An enlarged heart was believed to be the cause of death.

5. Donnavan Hill

Hill, a California teenager whose paralyzing pop Warner football injury led to increased safety for young players, dies May 11 2016 of complications from surgery related to management of his injury.

6. Antonio Puerto

Spanish footballer Antonio Puerto played in Spain International Football team, Spain U21, Spain U23. Puerto collapsed in the penalty area due to a cardiac arrest at home ground Sanchez Pizjuán against Getafe CF after only 35 minutes of the game. As a tribute all 22 participants having the name 'PUERTA' printed on the back of their jersey in Seville vs. A.C. Milan on 31 August 2007.

7. Duk Koo Kim

South Korean boxer Duk Koo Kim won 17 fights out of 20 fights that he ever participated in, out of which 8 wins came by knock-outs with his traditional Southpaw stance. He died during a world championship boxing match against Ray Mancini on November 13, 1982. Referee Richard Green stopped the fight after Kim went flying into the ropes because of simultaneous hard right-hand punches by Mancini and declared Mancini the winner by TKO nineteen seconds into the 14th round.

He was rushed to the hospital where he was found to have “a subdural hematoma consisting of 100cc of blood in his skull.” Koo Kim died four days after the fight with Mancini on November 17. This death surely serves its mention among the tragic deaths.

8. Chuck Hughes

American football wide receiver Chuck Hughes played for Philadelphia Eagles from 1967 to 1969. He then played for Detroit Lions from 1970 to 1971 in the National Football League. Hughes is the only NFL player to die on the field during a game to date. He was drafted in the fourth round in the 1967 NFL Draft by the Philadelphia Eagles.

9. Reggie Lewis

American professional basketball player Reggie Lewis played as a Small forward for the Boston Celtics in the NBA from 1987 to 1993. He suffered sudden cardiac death on the basketball court on 27th July 1993 at an off-season practice at Brandeis University in Waltham, Massachusetts.

After the tragic death of Lewis, his Number 35 jersey was retired by the Boston Celtics and also by the Northeastern. And now, this death deserves its mention among the athletes who died on the field.

10. Bill Master ton

Canadian–American professional ice hockey center Bill Master ton is the only player to die as a direct result of injuries during a game in National Hockey League (NHL) history. He played for the Minnesota North Stars in the NHL in 1967–68 season. He faced a severe

internal brain injury on the game against the Oakland Seals at the Met Center. Bill died during the first period of Minnesota on January 13, 1968.

The impact of the collision with Larry Chan and Ron Harris caused Master ton to bleed from his nose, ears, and mouth. He received emergency medical treatment in the dressing room. And then, rushed to Fairview-South dale Hospital but died without ever regaining consciousness. He died on January 15, some 30 hours after his tragic sports accident.

From all the above instances, irrespective of the cause of death and sport, prior athletic event physical and mental examination, taking the necessary measures for cardiopulmonary resuscitation, prompt defibrillation, and, finally, the preparation of national registries in which all deaths are recorded which helps the upcoming athletes.

TREATMENT⁶

Injuries during Sports Are A Dime A Dozen. Injuries may range from a simple sprain to life threatening timely response towards the rescue of injured avoids a serious, irreversible and even a fatal damage.

THE RICE TECHNIQUE

1. **Rest:** Rest the area to allow the tissues time to heal.
 2. **Ice:** Applying cold therapy (ice or an ice pack wrapped in a thin towel) to an acute injury reduces swelling and pain. Ice is a vaso-constrictor. It causes the blood vessels to narrow and limits internal bleeding at the injury site. Apply cold to the affected area every two hours for no more than 20 minutes at a time. Allow the skin temperature to return to normal before icing it again. You can ice an acute injury several times a day for up to three days.
 3. **Compression:** Compression of an acute injury is perhaps the next most important immediate treatment tip. By quickly wrapping the injured body part with an elastic bandage or wrap, you help keep swelling to a minimum. If possible, it's helpful to apply ice to the injured area over the compression wrap to limit the swelling.
- **Elevation:** Elevating the injured area is another way to reduce the blood flow and swelling to the area.

- Medicines should only be a small part of an overall treatment plan. Sports injuries need to be properly diagnosed and treated in a way that looks at both the causes and effects of the injury.

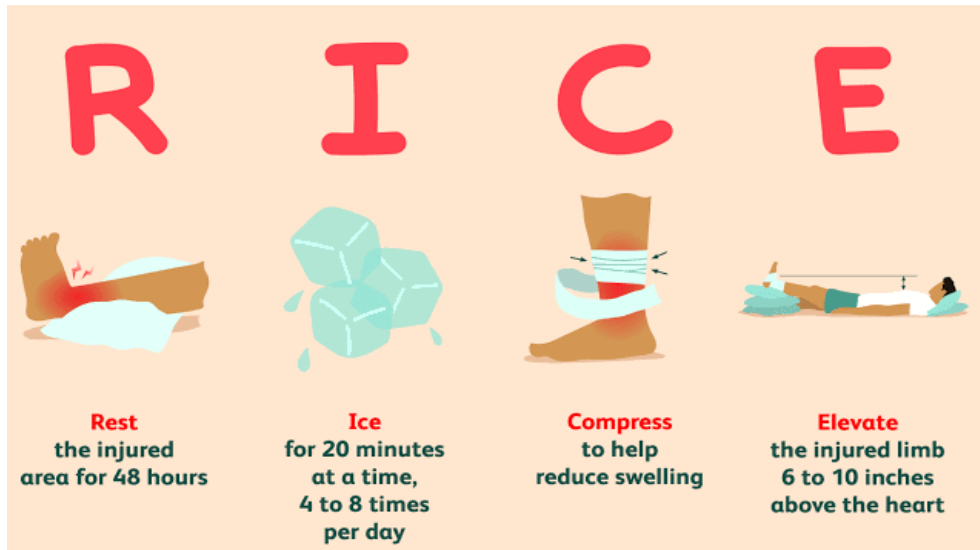


Figure No. 2: RICE Technique

- **PHARMACOLOGICAL TREATMENT:**

- Nonsteroidal anti-inflammatory drugs (NSAIDs) are helpful for chronic conditions in which the inflammation does not help the injury heal. For acute injuries, they may actually delay healing.
- Sports medicine doctors may recommend rest, heat or cold to the affected area, pain-relieving medications, electrical stimulation of the muscles and nerves, a cortisone injection, or in extreme cases, surgery.
- **Analgesics:** Two sub-categories exist, narcotic and non-narcotic preparations. Narcotics exist in both injectable and oral forms. Injectables include Morphine, Demerol, and Dilaudid.
- **Anti-inflammatory Medications:** The other class of drugs commonly used in the treatment of athletes are the anti-inflammatory medications. These exist as steroid and NSAIDs. They include the commonly prescribed oral form, prednisone, and the various preparations that are the main ingredient of “cortisone shots”.
- **Antibiotics:** Antibiotics may be required in the treatment of sports-sustained lacerations and abrasions which become secondarily infected. Recently there has been concern raised

over the growing incidence of infections caused by an antibiotic resistant strain of the very common bacteria, *Staphylococcus aureus*.

- **Miscellaneous OTC Medications:** These include the highly publicized glucosamine and chondroitin sulfate, MSM, a large variety of herbal based medications, as well as nutritional and mineral supplements.

SUGGESTIONS AND STRATEGIES⁷-The role of sports is unparalleled and it helps improve physical fitness and mental balance as injuries are inevitable during sporting the following strategies may be followed to avoid them.

- 1. Take time off.** Plan to have at least 1 day off per week and at least one month off per year from training for a particular sport to allow the body to recover.
- 2. Wear the right gear.** Players should wear appropriate and properly fit protective equipment such as pads (neck, shoulder, elbow, chest, knee, shinbone), helmets, mouthpieces, face guards, protective cups, and eyewear. Young athletes should not assume that protective gear will prevent all injuries while performing more dangerous or risky activities.
- 3. Strengthen muscles.** Conditioning exercises like warm-up stretching during practice strengthens limb muscles involved in play.
- 4. Increase flexibility.** Stretching exercises after games or practice can increase flexibility. Stretching should also be incorporated into a daily fitness plan.
- 5. Use the proper technique.** Most suitable technique should be chosen based on age, physical stamina and experience in the particular sport.
- 6. Take breaks.** Rest periods during practice and games can reduce injuries, prevent heat illness and collapse, helps to rejuvenate.
- 7. Play safe.** Strict rules against headfirst sliding (baseball and softball), spearing (football), no bodyline (cricket) and checking (in hockey) should be enforced.

Do not play through pain.

8. Avoid heat illness. by drinking plenty of fluids before, during and after exercise or play; decrease or stop practices or competitions during high heat/humidity periods; wear light clothing.

9. If children are jumping on a trampoline, they should be supervised by a responsible adult, and only one child should be on the trampoline at a time; 75% of trampoline injuries occur when more than one person is jumping at a time.

10. Sports-Related Emotional Stress.

The pressure to win can cause significant emotional stress for a child. Sadly, many coaches and parents consider winning the most important aspect of sports. Young athletes should be judged on effort, sportsmanship and hard work. They should be rewarded for trying hard and for improving their skills rather than punished or criticized for losing a game or competition. The main goal should be to have fun and learn lifelong physical activity skills.

CONCLUSION

All work and no play make gym a dull boy.

In this technology driven modern era, man find less and even no time for physical activity. Consequently, it leads to several disorders like obesity, Diabetes mellitus, cardiac disorders etc., outdoor sports provide a good deal of physical exercise, promotes teamwork, social behavior and agility. sports and injuries are inseparable. Preventive care, proper supervision and right choice of sport and technique will avoid, minimize the injury. Any unanticipated injuries could also be handled with expertise, timeliness and well equipped first-aid box ensures an in time management of any critical situation. The role of well experienced coach and trainer is to create the right conditions for learning to happen and to find ways of motivating the players and most importantly managing the injuries quite commonly happening in outfield.

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