Sports Injuries

Classification and Management

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For Teachers

Introduction

This program focuses on developing an understanding of the different types of sports injuries and how they are managed. The aim is to provide a practical approach to address current sports medicine principles and practices that are relevant to all sports.
This resource is divided into a number of segments that cover a range of topics including injury classification, soft and hard tissue injuries, assessment and management procedures and the inflammatory response. Key concepts such as RICER, TOTOPS and DRABC are explored using sports specific examples and demonstrations.
The program features interviews with Wendy Braybon (Head Physiotherapist of Victorian Institute of Sport), Dr. John Boas (Australian Athletics Coach), Jessica Gallagher (Ski, track and field athlete and Paralympian) and Drew Ginn (Olympic Triple Gold Medallist in Rowing). They provide discussion on key concepts related to sports injuries and explain how they relate to practical sporting situations.

Timeline

00:00:00 Introduction
00:0038 Types of injuries
00:02:12 Skin injuries
00:03:36 Muscular injuries
00:06:10 Inflammatory response to soft tissue injuries
00:08:33 Management of soft tissue injuries
00:12:43 Management of hard tissue injuries
00:14:38 Assessment of hard tissue injuries
00:18:05 Conclusion
00:18:32 Credits
00:19:20 End program

Related Titles

Improving Performance: Elite Athlete Case Studies
Skill Acquisition for Sports Performance
Sports Injury Prevention and Assessment
First Aid Two - Outdoor Injuries
Evaluating a Training Program

Recommended Resources

http://physicaltherapy.about.com/od/sportsinjuries/Sports_Injuries_and_Management.htm
http://www.elastoplastsport.com.au/Injury/Default.aspx
http://www.sportsinjuryclinic.net/cybertherapist/injurylist.htm
http://www.nlm.nih.gov/medlineplus/sportsinjuries.html
http://www.elastoplastsport.com.au/Common/Pdf/Lesson3_notes.pdf
http://www.leuko.com.au/Injury/Ricer.aspx
http://sma.org.au/
http://www.smasa.asn.au/smartplay/ouch/injury_manage/injury_info.html

Student Worksheet

Initiate Prior Learning

1. As a class brainstorm a list of the injuries that you have had or have seen during a sporting match.

2. Recall one major injury that you have had, write down the steps that were taken in first aid.

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3. Describe how you know if someone has seriously injured themselves.

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4. In pairs, research one type of sports injury. Describe the injury and how it is managed.

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5. Research the various ways that ice can be used to treat injuries. Provide a summary of these methods.

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Active Viewing Guide

1. Draw lines to match the type of injuries with the description and examples.

Type of Injury	Description	Example
Direct	When specific body regions are used over periods of time, particularly when the movements are repetitive and low-impact	When you strain your hamstring whilst sprinting
Indirect	Injuries to bone and teeth	Shin splints from running on the concrete every day.
Overuse	Is caused by forces inside the body, such as excessive strain on the muscles and ligaments	A muscular tear or blister on the skin
Soft tissue injury	When the body makes contact with an external object, for example another person, object, or the ground.	A broken rib from a hard football tackle
Hard tissue injury	An injury to any tissue except bone and teeth	When you dislocate your finger if it is hit on the end by a ball

2. Complete the table on skin injuries by filling in the blank spaces.

Type of skin injury	Description	Example
Skin abrasion	When the surface layer of the skin is broken. They usually cause pain and shallow bleeding as a result of skin scraping.	
Laceration		A boxer's eye lid is split open from a punch
	Where the outer layer of skin separates due to friction, which causes a pocket of fluid or blood to form	
Calluses		

3. Describe a muscular injury.

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4. Compare a muscular sprain to a muscular strain.

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5. Identify the symptoms of a muscular sprain.

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6. Complete the table showing the different levels of muscular tear.

Grade 1	Grade 2	Grade 3

7. Explain the term contusion and give a practical example

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8. Explain the purpose of the inflammatory response to soft tissue injuries.

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9. Complete the table outlining the phases of the inflammatory response.

Phase	Description	Symptoms	Time
Acute inflammatory phase			
Proliferation or Healing Phase			
Remodeling phase			

10. Identify and outline the terms related to the Acronym RICER.

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11. Define the following types of hard tissue injuries:

a) Complete fracture.

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b) Incomplete fracture.

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c) Simple.

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d) Complex or compound fracture.

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e) Dislocation.

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12. Identify the two important procedures for hard tissue injuries.

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13. Outline the procedures for a tooth dislocation.

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14. In what situation would you use the DRABC regime? Outline the procedures used.

15. In what situation would you use the TOTAPS regime? Outline the procedures.

Extension Activities

1. You will be given an injury. In groups of 2-3 you will have to manage the injury and present to class.

2. You will be given a type of sports injury. You are to research the injury and design a pamphlet showing a description, management, rehabilitation, preventative actions and sports that the injury is common in.

3. On a manikin practice the DRABC regime.

4. ICT – develop a slide show or photo story that recognizes all major soft and hard tissue injuries.

5. Design a collage showing all the major injuries in sport, management techniques (e.g. ice) and some practical preventative actions (e.g. stretching, taping)

Suggested Student Responses

Initiate Prior Learning

1. As a class brainstorm a list of the injuries that you have had or have seen during a sporting match.
   Answers will vary but may include ankle sprain, broken forearm, concussion, dislocated finger etc.

2. Recall one major injury that you have had, write down the steps that were taken in first aid.
   Answers will vary

3. Describe how you know if someone has seriously injured themselves.
   They tell you, pain, swelling, discoloration, deformity, limited movement, unconscious, a lot of bleeding

4. In pairs, research one type of sports injury. Describe the injury and how it is managed.
   Answers will vary

5. Research the various ways that ice can be used to treat injuries. Provide a summary of these methods.
   Ice in bag, ice bath, frozen cups, ice packs – 20 min on then 20 min off for 48 hours

Active Viewing Guide

1. Draw lines to match the type of injuries with the description and examples.

Type of Injury	Description	Example
Direct	When the body makes contact with an external object, for example another person, object, or the ground.	When you dislocate your finger if it is hit on the end by a ball
Indirect	Is caused by forces inside the body, such as excessive strain on the muscles and ligaments	When you strain your hamstring whilst sprinting
Overuse	When specific body regions are used over periods of time, particularly when the movements are repetitive and low-impact	Shin splints from running on the concrete every day.
Soft tissue injury	An injury to any tissue except bone and teeth	A muscular tear or blister on the skin
Hard tissue injury	Injuries to bone and teeth	A broken rib from a hard football tackle

2. Complete the table on skin injuries by filling in the blank spaces.

Type of skin injury	Description	Example
Skin abrasion	When the surface layer of the skin is broken. They usually cause pain and shallow bleeding as a result of skin scraping.	A graze caused by falling down on asphalt at netball
Laceration	Where there is damage to the skin and to the underlying tissue	A boxer's eye lid is split open from a punch
Blisters	Where the outer layer of skin separates due to friction, which causes a pocket of fluid or blood to form	Your shoes rub on the heel of your foot causing a pocket of fluid to form under the skin.
Calluses	Result from a build up of dead skin caused by frequent rubbing or pressure.	When you get hard skin on the bottom of your foot from constantly changing direction in netball.

3. Describe a muscular injury.
   Muscular injuries occur when the muscle, tendon or ligament soft tissue in the body is damaged.

4. Compare a muscular sprain to a muscular strain.
   When a ligament in the body is injured it's called a sprain. A strain, on the other hand, is an injury to the muscles and tendons of the body.

5. Identify the symptoms of a muscular sprain.
   Symptoms will include pain, particularly at the end of the range of movement, swelling and instability.

6. Complete the table showing the different levels of muscular tear.

Grade 1	Grade 2	Grade 3
• When you just have a tear of a few fibers in the muscle • There will be pain on stretch, but no less strength when you test that muscle for strength. • There'll be mild pain, but not severe pain.	• There is more damage to a significant number of fibers. • There will be a reduction in strength • There will be pain on stretch of that muscle	• When you get a complete tear of a muscle • You can feel the tear within the muscle • More severe pain • Limited movement

7. Explain the term contusion and give a practical example
   A contusion (or bruise) occurs when an athlete collides with an external object, causing local muscular damage. This can result in pain, swelling and heat at the injury site. e.g. when a player collides with another player and they get a corked thigh.

8. Explain the purpose of the inflammatory response to soft tissue injuries.
   The purpose of this response is to defend against harmful substances and infection, dispose of dead tissue caused by the injury, and to promote the renewal process.

9. Complete the table outlining the phases of the inflammatory response.

Phase	Description	Symptoms	Time
Acute inflammatory phase	• Damage of the capillary allows inflammatory cells to flood out of the blood vessels into the ligamentous tissue. • This brings macrophages – cells – which are there to eat away the debris from the damaged cells that have occurred due to injury. • You also get some white blood cells, the inflammatory cells, which are aiding in the response phase of healing	• The body will send blood to the area • The area will become red, swollen and warm. • the tissues will expand causing pressure on the nerves • The area will be painful.	• This stage lasts for 42-72 hours.
Proliferation or Healing Phase	• Fibreblasts move from the blood vessels to the tissue, to initiate the healing. • The fibreblasts start to build the scar matrix, and collagen is repaired.	• Scar tissue build up • Thickening of the ligament or tendon	• This phase can occur within 48 hours to 6 weeks after the injury.
Remodeling phase	• The ligament is remodeled, with increased production of scar tissue and strengthening and development of the replacement tissue.	• Ligament or tendon gradually comes down to its old size • Increase strength	• 6 weeks after the injury up to 3 months or longer

10. Identify and outline the terms related to the Acronym RICER.
    R = Rest
    I = Ice
    C = compression
    E = Elevation
    R = Referral

11. Define the following types of hard tissue injuries:

    a) Complete fracture.
    Complete fracture is where the bone snaps in two or more parts.

    b) Incomplete fracture.
    Incomplete fracture is where the bone is cracked, but not completely broken into two separate pieces.

    c) Simple.
    Simple fractures are when the bone is cleanly broken, without breaking through the skin.

    d) Complex or compound fracture.
    Compound fractures occur where a bone breaks through the skin, causing an open wound.

    e) Dislocation.
    Dislocations usually occur at unstable joints that allow for a wide range of movement, for example shoulder, knee and finger joints.

12. Identify the two important procedures for hard tissue injuries.
    Immobilization
    Splinting

13. Outline the procedures for a tooth dislocation.
    If the tooth has been dislodged you need to put it back into place and splint it to the adjacent tooth using aluminum foil. If this is not possible, place the tooth in milk or saliva.

14. In what situation would you use the DRABC regime? Outline the procedures used.
    If the situation may be life-threatening, you need to go through the DRABC checklist. DRABC provides a systematic routine for checking for danger, response, airways, breathing and circulation.

    - **Danger = if they're still in any chance of being in danger you must remove that danger away from them.**
    - **Response = where you talk to that person – can you hear me? What is your name?**
    - **Airway = make sure their airways are clear. If someone is unconscious then they lose their gag reflex and their tongue can then block their airways. This is a possibility in a situation where they've cause to vomit or something else is blocking their airway**
    - **Breathing = look at the chest and see if the chest is moving up and down and listen to see if we can hear them breathing. If there is no breathing give 2 rescue breaths.**
    - **Compressions = If there is still no breathing start CPR. 2 breaths and 30 compressions and call for ambulance.**

    If they are breathing, place in the recovery position and attend to other injuries. Bleeding first, then bone.

15. In what situation would you use the TOTAPS regime? Outline the procedures.
If the injury is not life-threatening, the TOTAPS procedure can be used to provide a detailed injury assessment. TOTAPS stands for talk, observe, touch, active movement, passive movement and skills.

- **Talk= the first thing you do is ask them about the injury. Where is your pain? What are you feeling? What happened to give you this pain? If you get an idea of the injury and the way it happens, it leads you more easily towards a diagnosis.**

- **Observe = Look for abnormalities; redness, bruising or bleeding. Compare to the other side of the body. If they've broken their leg and it's a compound fracture, you're going to see the bone coming through the skin.**

- **Touch = Touch area to check for swelling and abnormalities as well as sensitivity to pain.**

- **Active movement = If the injury isn't so bad then you can ask them to move the injured area. Are they able to move it without pain?**

- **Passive movement = If they're able to move it without pain then do some passive movement so you can over-press and feel how well the knee is moving.**

- **Skills = If the injury doesn't seem bad, then get the athlete up and have them walk first, and then jog. If they're able to do this without too much pain, and then you can test their skills and how well they're able to move. It may be possible for the athlete to continue on with the sport or they may need to stop immediately, come off the ground, and you start your RICER regime.**