



Treatment of minor sports injuries in the pharmacy

Sumari Davis, BPharm
Amayeza Information Services

Introduction

Sports injuries refer to the kinds of injuries that occur during sports or exercise and can affect any part of the body, including the muscles, bones, joints and connective tissues (tendons and ligaments).

Acute injuries occur suddenly and may result in immediate pain, restriction of movement and the inability to bear weight on the affected limb. Chronic injuries usually develop over a period of time following overuse of one area of the body and may result in persistent pain often aggravated by participation in physical activity.

This article discusses the basic management and treatment of some of the most commonly occurring sports injuries and recommendations on when to refer patients for further treatment.

The most common injuries

Some of the most common sports injuries include:

- Sprains – stretching, twisting or tearing of ligaments that join the ends of the bones together such as the ankles, knees and wrists
- Strains – stretching or tearing of the muscles or tendons (tissues that attach muscles to the bone) such as Achilles tendonitis or rupture of the Achilles tendon
- “Shin splints” – strain of the muscles along the front of the lower legs often seen in long distance runners

- Fractures of the bones
- Dislocation of joints
- Head injuries

Muscle injuries account for around 10–55% of all sports-related injuries; they have a high recurrence rate and can result in the inability to participate in training or competition. When an acute injury occurs, the soft tissues and capillaries (small blood vessels) in the affected area are damaged. This causes the leakage of liquids that results in local swelling (inflammation). Both the direct damage and subsequent swelling lead to pain, tenderness and stiffness. Healing can result in shortening of the muscle that makes the muscle more vulnerable to further damage.

Dislocations and fractures are usually easy to spot due to deformities at the affected joint or site and need to be referred for further management. Head injuries are always considered serious and should also be referred for further management.

Initial management

Initial (on-field) therapy with compression and ice or cold packs should start as soon as possible following an injury, in order to reduce swelling, inflammation and bruising.

Compression bandages should be applied as soon as possible by using broad elasticised bandages that are wrapped quite tightly around the affected area. This will assist in limiting further swelling but should be loosened after the first 20–30 minutes, ensuring that it is not too tight so as to hinder blood flow. Continuous moderate compression should then be applied.

The application of ice or a cold pack causes the constriction of blood vessels that limits the leakage of fluids and blood and therefore reduces swelling and bruising at the site of injury. In addition, cold delays the conduction of pain messages, resulting in pain relief. Cold packs should be applied for approximately 15 to 20 minutes at a time and may be repeated two or three times a day for the first 48–72 hours. Cold packs may be as simple as a pack of frozen peas or ice but are also available commercially. To prevent cold injury or frostbite,

the pack should be moved occasionally and the ice should be wrapped in a cloth or towel to avoid direct contact with the skin.

Elevating the affected area above heart level as much as possible for the first 24 to 48 hours encourages drainage and relieves swelling. This initial management of muscle injuries can be summarised by the acronym PRICE as follows:

- **P**rotect by immobilising the affected area using support such as bandages, special boots, casts, slings or splints where applicable
- **R**est the affected area for three to five days and then restart activity gradually. Avoid any exercise that results in pain
- **I**ce packs should be applied for 15 to 20 minutes at a time and can be repeated two or three times a day for the first 48 to 72 hours to limit initial inflammation
- **C**ompression bandages wrapped quite tightly around the affected area for 15 to 20 minutes after application of ice and then loosened enough to provide moderate compression to reduce swelling
- **E**levation of the affected area above heart level as much as possible for the first 24 to 48 hours

Heat packs may be introduced 72 hours after an injury to increase blood flow to the area resulting in improved oxygen, protein and nutrient supply to the area to improve healing.

Managing pain

Topical treatment options

Topical pain relievers are a popular and effective treatment for sprains and strains and several products are available in the form of ointments, creams, lotions, sticks, gels, sprays and patches to combine ease of use with effectiveness. The mere act of massaging increases blood flow and reduces the sensation of pain. The application of counter-irritants and rubefacients increases blood flow and causes a feeling of warmth over the area of application. The theory behind these products is that they bombard the nervous system with sensations such as warmth and irritation and this is thought to distract attention from the pain felt.

Methyl salicylate is one of the most widely used and effective counter-irritants and is available in various formulations at concentrations between 10% and 60%. Menthol has a cooling effect when applied to the skin that is followed by a sensation of warmth.

Topical gels, creams and ointments containing nonsteroidal anti-inflammatories (NSAIDs) such as ibuprofen, flurbiprofen, ketoprofen, diclofenac, indomethacin, benzydamine and piroxicam are effective and are associated with a lower risk of systemic side-effects when compared to oral NSAIDs. However, patients with allergic asthma and aspirin sensitivity should use these products with caution as there have been reports of asthma aggravated by the topical use of NSAIDs. Similarly, gastrointestinal adverse effects such as nausea, diarrhoea and heartburn have also occurred with topical NSAID use.

Topical agents may be applied up to four times a day as necessary. Sprays are useful for patients who live alone in order to treat difficult-to-reach areas. Avoid contact with eyes, mouth, mucous membranes and broken skin when applying topical products and discontinue use if blistering or intense irritation of the skin occurs. It is important to always follow the manufacturer's instructions, especially in younger children who may have more sensitive skin.

Oral treatment options

A wide range of products with different combinations of analgesics is available for treatment of sport injuries. NSAIDs are considered the first-line treatment option to reduce swelling and inflammation and alleviate pain. NSAIDs, however, can cause kidney problems and bleeding and should be avoided in patients with a history of gastric ulcers, bleeding disorders or taking blood thinning medication, and those consuming large amounts of alcohol. Muscle relaxants may be beneficial as short-term treatment for muscle spasms. Patients should be told not to use medication to continue exercising with the injury as this may increase the risk of further injury and permanent damage. If there is no improvement after using medication regularly for five days, the patient should see a doctor.

It is always important to ask patients about other medicine use so as to avoid duplication, medicine interactions and unnecessary compounding of side-effects.

Conclusion

Initial management using PRICE therapy is the most relevant approach in the treatment of acute muscle injuries. The use of topical agents may be as effective as oral treatment with a lower risk of developing side-effects. Before starting oral treatment with NSAIDs or a muscle relaxant, it is important to find out about other medications that the patient is taking as well as any other medical conditions that the patient may have. Patients should be referred to a doctor if deformities in the joint or bone are present, if the patient cannot bear weight on the affected limb, if excessive swelling is present, if the skin colour has changed more than with normal bruising and if there is no improvement after five days of treatment.

Bibliography

1. Stoppler MC, Shiel WC. Sport injury treatments. MedicineNet.com. Updated: 13 June 2018; Accessed 9 October 2018. Available from: https://www.medicinenet.com/sports_injury_treatments/views.htm
2. NHS sports injuries. Updated 21 March 2017; Accessed 9 October 2018. Available from: <https://www.nhs.uk/conditions/sports-injuries/types/>
3. Hoffman M. The seven most common sports injuries. Web MD. Updated 1 June 2007, Accessed 9 October 2018.
4. Davis S. Managing common sport injuries in the pharmacy. S Afr Pharm J. 2016;83(3):22-26 Available from: <http://www.sapj.co.za/index.php/SAPJ/article/view/2211/3981>
5. Blenkinsopp A, Paxton P, Blenkinsopp J. Symptoms in the pharmacy. 7th ed. Wiley-Blackwell; 2014.
6. Hotfiel T, Seil R, Bily W, et al. Nonoperative treatment of muscle injuries – recommendations from the GOTS expert meeting. Journal of Experimental Orthopaedics 2018;5(1):24.
7. Pharmacy magazine. How to treat and manage sports injuries. Accessed 17 Oct 2018. Available from: <https://www.pharmacymagazine.co.uk/how-to-treat-and-manage-sports-injuries>
8. MIMS Guide to OTC products. Volume 24, 2018.