

Managing common sport injuries in the pharmacy

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Abstract

Pharmacists are often approached for advice on common sport injuries, such as sprains and strains. Although some injuries may be managed with rest, ice, compression and elevation, as well as treatment with local or oral anti-inflammatory drugs, others, such as head injuries and fractures, can be serious needing immediate referral for further assessment. The extent of the contribution of the inflammatory response to the healing process is currently unknown, but has led some to question the use of ice and anti-inflammatory drugs to suppress this physiological response. Evidence in this regard is, however, still insufficient and needs further exploration. Short-term treatment with anti-inflammatory drugs or paracetamol, in combination with nonpharmacological management, is still recommended for most commonly occurring sport injuries.

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Introduction

Whether patients participate in professional sport, play in the school team or exercise at their own pace to maintain a healthy lifestyle, sport and exercise are bound to result in pain and injuries. Every sport, including athletics, rugby, hockey, cricket, cycling, soccer, tennis or swimming, is associated with various risks and injuries. Studies have shown that injuries occur more frequently early in the season, and late during games, and that a higher level of play is also associated with a higher incidence of injury.¹ Injuries include damage to the muscles, tendons and joint structures.² Pharmacists are often asked for advice on the management of common sport injuries.³ This article will discuss some of the most common injuries, recommendations for the management of some of these conditions and signs that are indicative of the need for referral.

Common sport injuries

Sprains and strains

Sprains occur when ligaments within a joint are overstretched, sometimes with tearing. Sprain injuries most commonly involve the ankles, knees and wrists.^{2,3} These injuries are usually caused by a sudden substantial force, such as falling, twisting or through direct impact. Patients may hear a "pop" when the injury occurs.⁴ Other symptoms include rapid swelling, pain and bruising, and the inability to move the joint or put weight on it, in more severe injuries.^{2,5} With a complete tear involving the joint capsule, it is also possible that fluids may leak out into the surrounding tissue, in which case swelling may be absent.³

Strains are injuries that occur when the muscles and tendons are damaged by overstretching or tearing. Sports often require sudden, powerful and repetitive muscle contractions.² When the muscle stretches unusually far or abruptly, it may be damaged, or torn partially or completely.⁵ Strains most commonly occur in the muscles of the back or hamstring, although some sports may result in injuries to the elbows, hands or forearms.² Achilles tendon injuries and "tennis elbow" and "golfer's elbow" are some examples of tendon strains.⁶ Muscle pain and stiffness which occur with movement are the symptoms of mild strains, while more severe injuries result in more extensive pain, swelling and bruising.⁵

It is important to return to full activity gradually in order to avoid further injury with sprains and strains. It is best to start off slowly with early mobilisation, and to participate in strengthening exercises and coordination exercises after these injuries.³

Dislocations and fractures

Dislocations occur when the ends of the bones are forced out of the joint. Dislocations are possible at the toes, ankles, knees, shoulders, hips, elbows, fingers or jaw. They often occur from a fall or a blow, such as those that are encountered in contact sports. They are usually easy to spot owing to deformity at the affected joint, and should be considered a medical emergency. Once a joint has been dislocated, the risk of recurrence increases.⁴

Fractures of the bone can occur, either as a result of blunt trauma sustained in contact sports or as stress fractures, due to overuse. Stress fractures are usually very small cracks in the bone, and can

be one of the causes of shin splints. Fractures can cause intense pain, numbness and tingling, swelling, bruising or bleeding, and limited mobility or inability to move a limb. Limbs or joints can be out of place or misshapen.⁴ Pain usually worsens with activity and improves with rest. Both fractures and dislocations need to be referred for further assessment and management.

Head injuries

Although the incidence of concussion in rugby is low, head injuries are always considered serious. Patients should always be referred for further medical treatment. If not hospitalised after undergoing assessment, the patient should be monitored carefully for two to three days, and return for follow-up should any of the following symptoms occur or worsen⁶:

- Confusion, memory loss or concentration difficulties
- Dizziness, clumsiness or balancing problems
- Slurred speech
- Blurred vision
- Tinnitus
- Nausea and vomiting
- Headaches
- Sensitivity to light and/or noise
- Behavioural or personality changes

Other injuries, although considered minor, may also need attention from time to time, and include blisters from friction, and sunburn or heat exhaustion from exposure to the elements, as well as toenail injuries after long-distance running.^{6,7}

Nonpharmacological treatment

The main objectives when managing acute sport injuries are to alleviate symptoms and restore functionality. A combination of rest, ice packs, compression and elevation (RICE) for the first 24–48 hours after an acute injury is recommended to reduce inflammation.²

Although rest is necessary to prevent further damage, complete inactivity is not recommended. Light training, while avoiding moving or straining the affected joint or muscle, can often continue.² Cross-training, e.g. where runners swim or cycle, rather than run, may maintain fitness without aggravating the injury. Any exercise that causes pain should be stopped. Patients with severe injury may need to use crutches, if applicable. If necessary, immobilisation should be limited to short periods before the start of rehabilitation exercises.⁶

The application of ice or cold packs to the affected area constricts the local cutaneous and subcutaneous capillaries and reduces blood flow to the area. The transport of inflammatory markers to the area is restricted, resulting in less inflammation, swelling and pain. Ice should never be applied directly to the skin. Place the ice in a plastic bag and wrap it in a towel. Cryotherapy should be applied as soon as possible after an injury for approximately

20 minutes at a time, and should be moved occasionally to decrease the risk of cold injury or frostbite.^{2,5,6} This may be repeated two to three times a day for the first 24–48 hours. The recommendation is that the application of heat should be avoided until the swelling subsides.^{2,3}

Compression bandages must be applied directly after cryotherapy, using broad elasticised bandages, special boots or splints. Bandages should not be too tight to allow for sufficient circulation. Elevating the injured area to levels above the heart utilises gravity to further reduce oedema.^{2,6}

Pharmacological treatment

Nonsteroidal anti-inflammatory drugs (NSAIDs) have always been considered as first-line treatment for the alleviation of pain and inflammation associated with sport injuries. A review of 11 studies indicated an improvement in symptoms compared to placebo. Although six different NSAIDs were analysed, no significant differences were detected in terms of efficacy. Another study on 122 patients indicated that the timing of administration may play a significant role. Immediate administration was compared to delayed administration, three days after injury. Patients in the group receiving immediate treatment reported a more rapid regression of swelling and an increased perceived ability to bear weight on their affected joints.²

NSAID medications are frequently prescribed for both reduction of swelling and inflammation as well as for pain relief. Stronger analgesics are not usually necessary, but muscle relaxants (e.g. orphenadrine citrate) may be utilised for a short period of time to treat muscle spasm.

The most common adverse events reported with the oral administration of NSAIDs include nausea, diarrhoea, abdominal pain and headaches. Although gastrointestinal toxicity and renal adverse events are mainly associated with long-term use, high-risk patients may be affected, even with short courses.^{2,8} High-risk patients include those who engage in excessive alcohol consumption, concomitant aspirin or chronic corticosteroid use, anticoagulant use or those with bleeding tendencies, as well as patients with a previous history of peptic ulcer disease.² Treatment should be provided for a maximum of five days. If the pain does not improve after five days of treatment, a doctor should be consulted.³

Some of the adverse events that commonly occur with the use of oral NSAIDs may be avoided by using topical NSAIDs. Local application and action reduces systemic absorption, with less adverse events as a result. Although the adverse events are reduced, they may still occur, and can include bronchospasm, dyspepsia, nausea and diarrhoea. Local irritation may also occur, which may necessitate discontinuation or switching to another product.³ However, there is a high placebo effect with the use of topical analgesic agents. This may be because the act of massaging increases blood flow to the area and stimulates the nerves, resulting in a reduction in the sensation of pain.³

Topical analgesic agents are available as creams, ointments, gels, sprays or patches. The active ingredients vary from methyl salicylate or menthol to anti-inflammatory drugs, such as diclofenac, flurbiprofen, indomethacin, ketoprofen and piroxicam. Sprays are useful for patients who live alone and who may not be able to treat difficult-to-reach areas with a cream or gel.^{2,3}

A word on healing

The inflammatory process is a complex one. Macrophages are part of the inflammatory process, but have been shown to play a role in recovery by removing cellular debris and releasing factors to promote muscle growth.⁹ This raises the question as to whether or not it is beneficial to suppress the inflammatory process by introducing ice and anti-inflammatory drugs as treatment after injury.

Some of the available reviews on the use of NSAIDs in the treatment of soft tissue injury provide conflicting conclusions. Some indicate symptomatic improvement with NSAID treatment over placebo, while others report no difference in the degree of muscle movement between the treatment and placebo arms.² One study found that the early introduction of NSAIDs led to more rapid regression in swelling and a perceived increased ability to bear weight, than that experienced in the delayed treatment groups.² Studies have indicated that NSAIDs have a beneficial effect following an acute injury and appear to facilitate an earlier return to function.^{10,11} Another study found that paracetamol was comparable with ibuprofen for pain relief. Some studies suggest that pain relief, rather than the control of inflammation, may be the primary benefit of NSAID therapy.¹² Data from a review on anti-inflammatory interventions seem to indicate that the primary inflammatory phase in the first hours post-injury is essential for the induction of signals that control tissue regeneration and that the timing of treatment should be to reduce the secondary inflammatory response to reduce secondary muscle injury.¹³

Conclusion

Early mobilisation and resting the affected area, followed by rehabilitation exercises, reduce pain and recovery time after injury.¹² The application of RICE for the first 24–48 hours after injury reduces inflammation.² The short-term use of oral and topical NSAIDs or paracetamol are acceptable options for the treatment of acute injuries.¹² Pharmacological treatment should not be used to facilitate continuous strenuous exercise after injury as returning to full activity before full recovery increases the chance of re-injury and may lead to permanent damage.² Patients should be referred to a doctor for further assessment if there is no improvement after five days of treatment.³

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