



## Sports injuries: treatment guidelines

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To maintain a healthy lifestyle, most people are encouraged to participate in some form of exercise. Many individuals enjoy participating in sport, anything from school teams to a professional level. An individual with a sport-related injury will very likely present at the pharmacy in need of assistance.

### Sports injuries

Sports injuries may be divided into traumatic injuries and overuse injuries. Traumatic injuries occur unexpectedly and may be caused by using poor equipment, landing incorrectly, slipping, etc. Overuse injuries occur when increasing stress is put on the muscles, tendons, and joints too quickly. This may be seen when people who are not used to exercise, start doing too much too soon, or in fit people who want to increase their fitness and sporting ability too quickly.

### When to refer

An individual arriving at the pharmacy with any of the following injuries should be referred to the doctor for assessment and treatment:

1. Any head injury including concussion
2. Deformed joints (possible dislocation)
3. Broken bones or fractures
4. Intense pain, numbness or tingling
5. Inability to move a limb
6. Joints or limbs that look out of place or misshapen

Less severe injuries such as mild sprains, strains and bruises can be treated in the pharmacy.

### Sprains and strains

Sprains and strains are common sports injuries. The symptoms include pain, swelling, tenderness, bruising and difficulty moving or putting weight on the affected area.

- A sprain is a twisted, stretched or a torn ligament. Ligaments are tissues that connect two bones in a joint. A sprain is commonly seen in the wrist, ankle, thumb and knee.
- A strain (also called a pulled muscle) is an overstretched or torn muscle or tendon. A tendon is a thick, fibrous cord that connects bone to muscle. Strains commonly occur in the hamstring (the thigh muscles at the back of the leg between the hip and the knee) and the lower back. Tennis elbow, golfer's elbow and Achilles tendon injuries are examples of tendon strain.

### Treatment

With a sports injury such as a sprain, strain or bruise, there is bleeding into the underlying tissues causing pain and swelling. The aim of treatment is to keep pain and swelling to a minimum and help the individual return to exercise as soon as possible. Usually, the damaged ligaments or muscles heal on their own over time. Scar tissue may form at the site of the injury.

A combination of protection, rest, ice, compression and elevation (PRICE) is recommended after an injury to reduce swelling and relieve pain.

#### Protection

Protect the injured joint from further injury by providing physical support until the symptoms have resolved. This will support the joint while the injury heals but should allow movement.

#### Rest

Rest the affected body part to avoid further injury. Avoid putting weight on the injury. Crutches or a walking stick may be needed. It may be possible to exercise other parts of the body that are not

injured. For example, a runner with an injured knee may be able to swim to maintain their fitness. However, any exercise that causes pain should be stopped. After about three days, try to start moving the injured area in order to improve the range of movement. As movement becomes easier and pain decreases, stretching and strengthening exercises can be started. Build on from this with a few simple exercises, then gradually increase. Some injuries, however, need a longer time to rest.

### Ice

Applying an ice pack to the injured area prevents fluid from leaking into the surrounding tissues. This will reduce swelling and bruising. Ice also provides pain relief by numbing the area. It is best to apply the ice pack immediately after the injury for about 20 minutes. This may be repeated every two to three hours. Do not apply ice directly to the skin, wrap it in a towel, and move the ice pack every few minutes to prevent cold injuries. Ice packs may be used for the first 24 to 48 hours.

### Compression

Wrap a crepe (elasticated) bandage around the affected area. This will help to reduce swelling, limit movement, and support the injury. The bandage should be firmly wrapped but not be too tight. Make sure that the area below the bandage does not turn blue, become numb, feel cold or tingle. Should any of these symptoms develop, loosen the bandage. Remove the bandage before going to sleep and permanently after 48 hours.

### Elevation

Keep the injured area raised, preferably above the level of the heart, as much as possible for a day or two.

For the first 72 hours after an injury, it is advised to avoid heat and massage. These activities may increase blood flow leading to increased swelling and bruising. After 72 hours, however, when swelling is likely to have stopped, applying heat packs and gently massaging the area may be soothing and help promote healing.

## Pharmacological treatment

In many instances, self-management using PRICE provides sufficient pain relief. However, when additional pain relief is needed the following may be recommended:

### Nonsteroidal anti-inflammatory drugs

Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, naproxen, indomethacin and diclofenac, may be used to relieve pain and reduce swelling (inflammation).

NSAIDs can irritate the gastrointestinal tract causing heartburn, nausea, diarrhoea, abdominal pain and bleeding. They may also cause sodium and water retention and have a negative effect on the kidneys. Therefore, NSAIDs are best avoided in individuals with congestive heart failure, kidney impairment, a previous stomach ulcer, bleeding tendencies or those taking anticoagulants, aspirin or corticosteroids. Asthmatics may experience worsening of asthma symptoms due to NSAID use.

NSAIDs should be taken with or after meals to reduce GI effects and for a maximum of five days. If the individual is still experiencing pain, a doctor should be consulted.

### Paracetamol

Paracetamol will relieve pain, but does not have an effect on swelling. It may be used when pain is the main symptom and there is only slight swelling. Paracetamol is relatively safe and does not have the gastric irritant effects of NSAIDs. It is, however, important to ensure that individuals take paracetamol correctly and that the recommended dosage is not exceeded. Paracetamol overdose is serious and can lead to liver failure and death.

Paracetamol should be used with caution in individuals with alcoholism, liver or kidney impairment. Refer to the pharmacist or doctor to determine whether or not paracetamol is the correct option in these instances.

### Topical preparations

The act of massaging the skin increases blood flow to the area, stimulating the nerves and causing a reduction in the sensation of

**Table 1:** Some over-the-counter treatment options for muscle pain available in South Africa

Active ingredient	Trade names	Dosing recommendations for adults
<b>Topical</b>		
Methylsalicylate	Deep Heat	Apply to affected area 3 to 4 times a day by lightly massaging before warming up and after exercise
Capsaicin	OsteoEze Rub	Apply thin layer to affected areas 3 to 4 times daily
Ibuprofen	Deep Relief Gel	Apply thin layer to affected areas up to three times daily
Diclofenac	Voltaren emulgel Panamor gel, Arthruderm	Apply 3 to 4 times daily to affected area
Flurbiprofen	TransAct patches	Apply one patch at a time, every 12 hours
<b>Oral</b>		
Ibuprofen	Advil Liquigel, Betagesic, Betaprofen, Ibucare, Ibugesic, Nurofen	Maximum of 1 200 mg per day in three or four divided doses, maximum 20 mg/kg body weight
Naproxen	Adco-Naproxen, Aleve	Maximum of 600 mg in 2 to 3 divided doses for a maximum of 5 days
Diclofenac	Adco-Diclofenac, Panamor	25 mg three times a day for a maximum of 5 days, maximum dose 75 mg per day
	Catafast D, Diclo-flam Blackcurrent dispersible tablets, K-Fenac	Maximum 150 mg per day in 2 to 3 divided doses for a maximum of 3 days

\*Always refer to the manufacturer's package insert for indications, dose, and instructions.

pain. The placebo effect of topical preparations may be quite high. However, if topical preparations provide relief, they are a good option as there are very few side-effects.

*The topical preparations available include:*

#### Topical NSAIDs

Topical NSAIDs are available in many formulations including lotions, creams, gels, sprays, and patches. The topical NSAIDs work at the site where they are applied. The NSAID is absorbed by the skin, targeting the injured area, resulting in pain relief and reduced swelling. Usually, these preparations are applied two to four times a day. Consult the manufacturer's dosing information for the product selected.

The chance of developing an NSAID related side effect is much lower with a topical NSAID than an oral NSAID. However, there is still a possibility that side effects occur, especially in the elderly.

#### Other topical preparations

Topical preparations containing methyl salicylate (wintergreen), menthol, camphor or capsaicin may provide pain relief by counter-irritation. It is thought that stimulating pain or causing irritation on the skin will distract from pain caused by the injury. These ingredients act by dilating the blood vessels and increasing blood flow to the area resulting in reddening and warming of the skin and/or also by mildly irritating the skin.

*When using topical preparations:*

- Do not apply to broken or damaged (e.g. sunburnt or chapped) skin or mucous membranes.
- Wash hands thoroughly after application to avoid accidentally getting the product in the eyes, mouth, or other sensitive areas where it can cause burning and stinging.
- If a rash or any other side effect develops, the individual should stop using the product and be referred to a doctor.

## Conclusion

When a sports injury is severe the individual should be referred to the doctor. However, in the case of mild sprains and strains, initial treatment with PRICE is recommended to reduce swelling and pain. If needed, medication such as oral NSAIDs, paracetamol or topical preparations may be used for a few days to treat the symptoms of the injury. It is important to emphasise that the individual should not return to full activity before they have fully recovered. Doing so increases the risk of re-injury and may lead to permanent damage.

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