



## Muscle spasms and strains

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### Introduction

Muscles are the “powerhouse” of the human body as their main function is to produce motion. Skeletal muscle is responsible for the movement of external areas of the body, for example, the limbs. Most people experience a muscular injury, such as a spasm or a strain, at some time during their lives. Such injuries can occur during sport or exercise, but can also take place while sitting, walking, or even during sleep. Muscle spasms and strains are a common complaint with which patients present at a pharmacy. Therefore, the pharmacist's assistant is in an ideal position to provide practical advice, combined with over-the-counter (OTC) treatment, if applicable, that is of great value to the patient.

### Muscle spasms

A muscle spasm or cramp is an involuntary and sudden contraction of a muscle. While the most commonly affected muscle groups are the back of the lower leg (calf muscle), back of the thigh (hamstrings), or the front of thigh (quadriceps), a muscle spasm in the neck, feet, hands, arms and abdomen is also common.

Although the exact cause of muscle cramps is unknown (idiopathic), research has shown that inadequate stretching of the muscles before exertion, as well as muscle fatigue, can lead to abnormalities in the mechanisms which control muscle contraction. This can lead to muscle spasms.

Muscle spasms may have many possible causes, including, but not limited to:

- Poor blood circulation
- Overexertion of the muscles while exercising
- Insufficient stretching before exercise
- Excessive exercise in the heat
- Muscle fatigue
- Dehydration
- A magnesium and/or potassium deficiency
- A side-effect of medication.

A muscle locked in spasm produces a sudden, tight and intense pain. The pain can range in intensity from slight to agonising. A muscle in spasm may feel hard to the touch, and/or appear visibly distorted. A twitch beneath the skin can be seen in some cases. A spasm can last a few seconds to 15 minutes or longer, and may recur a few times before it goes away.

### Treatment and prevention

Muscle spasms usually resolve with self-care measures without the need to see a doctor. It is important that the patient stops the activity which triggered the spasm. The affected muscle should be gently stretched and massaged, and held in the stretched position until the cramp stops. Heat can be applied to tense or tight muscles, or ice to sore or tender muscles.

Muscles are bundles of fibres which contract and expand to produce movement. Regular stretching lengthens these fibres so they can contract and tighten more vigorously during exercise, thereby reducing the risk of the muscle going into a spasm. Keeping well hydrated also reduces the risk of muscle spasms due to dehydration and overexertion.

### Muscle strains

A muscle strain is injury to the muscle as a result of strenuous activity. Sometimes referred to as a “pulled” muscle, a strain is a stretched or torn muscle or tendon, i.e. the tissues which connect the muscle to the bone. Twisting or pulling these

tissues can cause a strain. Almost anyone can put undue tension on muscles during the course of normal daily activities with sudden, quick movements, such as lifting heavy objects, during sports, or while performing work tasks.

Strains can occur suddenly or develop over time. The symptoms of a muscle strain include pain, muscle cramps, swelling and difficulty moving the affected area.

A severe muscle strain can result in a muscle tear, which may damage the small blood vessels, causing bleeding with or without bruising, and pain caused by irritation of the nerve endings in the area.

Muscle strains are particularly common in the legs and back, i.e. hamstring strains and lumbar (lower back) strains. The symptoms of a muscle strain include:

- Pain in the affected muscle
- Swelling
- Bruising
- Muscle spasm
- Loss of some, or all, of the function in the affected muscle.

### Treatment and prevention

Most strains can be managed at home, using OTC treatment and practical advice. If the injury is minor, patients can take care of their injury by applying the principles of the acronyms of “HARM” (what to avoid following an injury) and “PRICE” (advice on how to manage an injury).

The patient should avoid “HARM” for the first 72 hours after a sprain or muscle strain by doing the following:

- *Heat*: Avoiding heat, such as a hot bath, sauna or heat pack
- *Alcohol*: Avoiding alcohol, as it increases bleeding and swelling, and slows healing
- *Running*: Avoiding running or any other form of exercise, as it could cause more damage
- *Massage*: Avoiding massage, which may increase the bleeding and swelling.

“PRICE” therapy refers to the following:

- *Protection*: Protecting the injured area from further injury
- *Rest*: Resting, by no longer participating in the activity which caused the injury, and resting the injured joint or muscle, i.e. avoiding activity for the first 48–72 hours after the injury
- *Ice*: Applying ice for the first 48–72 hours of the injury. The ice should be wrapped in a damp towel and applied to the injured area for 15–20 minutes every 2–3 hours during the day
- *Compression*: Compressing or bandaging the injured area helps to limit any swelling and movement which could damage it further. The compress should be wrapped snugly around the affected area, but not so tightly that it restricts blood flow. It should be removed before bedtime
- *Elevation*: Keeping the injured area raised and supported on a pillow helps to reduce swelling.

Topical or oral OTC treatment is used to reduce pain and inflammation, e.g. analgesics (paracetamol) or nonsteroidal

anti-inflammatory drugs (NSAIDs), such as ibuprofen. Cells in the body that promote the inflammatory response play an important role in healing an injured muscle. Although oral OTC NSAIDs are useful in injuries because of their anti-inflammatory properties, they should be avoided for the first 48 hours following an injury. Paracetamol can be used for pain relief for the first two days after the injury. The prolonged use of NSAIDs ( $\geq 7$  days) is not recommended.

### When to refer

Most strains are minor, and resolve at home. However, a patient should be referred to his or her doctor when:

- The pain is particularly severe
- The patient cannot move the injured joint or muscle
- The patient cannot put any weight on the injured limb
- The injured area looks crooked, or features unusual lumps or bumps (other than swelling)
- The patient complains of numbness, discolouration or coldness in any part of the injured area
- The symptoms have not started to improve within a few days of self-treatment.

These cases should be assessed by a doctor because they may indicate that the strain is severe, or another serious injury or underlying injury, such as a fracture, could be present.

### Conclusion

Pharmacist's assistants often encounter patients seeking advice on how to treat muscle injuries, such as spasms and strains. Most of these injuries resolve with time. Practical advice, combined with topical or systemic OTC treatment, helps to relieve symptoms during the recovery period. The pharmacist's assistant can also provide practical advice on how to prevent such injuries in the future.

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